The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees

Vol. XLIII. CHICAGO, ILLINOIS, OCTOBER 15, 1904. No. 16.

Original Articles.

ETIOLOGY OF CHOLECYSTITIS AND CHOLELITHIASIS.*

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In considering the diseases of the gall bladder it is necessary to recognize that this viscus constitutes one of the most vulnerable points for infection in the abdominal cavity, and in this respect is analogous to the fallopian tube and the appendix.

A difference is noted in comparison with the appendix in that in the latter structure infective agents are more or less constantly present in its lumen normally, while the gall bladder is generally free from micro-organisms; furthermore, infection of the gall bladder concerns itself more with the contents than the walls, the sterile bile becoming a culture medium for micro-organisms, while in appendix infection the coats are more prominently involved.

The liability of the gall bladder to disease is due mainly to its position, interposing itself as a guard between the bacterial hordes of the intestine and the liver; and in the immunity which the liver appears to possess the gall bladder exerts a very important rôle.

In the majority of instances the bile is free from micro-organisms during health, this being particularly true of the gall bladder, the cystic and hepatic ducts, while the common duct usually contains a greater variety of micro-organisms.

Netter,[1] Naunyn,[2] Leubuscher, Gilbert and Girode[3] and Myaki[4] found the bile free in healthy animals. Fraenkel and Krause[5] examined the bile in 130 cases at autopsy and found it sterile in 105 instances, and in 11 cases of gallstones it was also free in 5 cases.

Mieczkowski[6] made cultures of the bile in 15 cases during life and found it sterile in all cases. Mikulicz, in examinations of the bile in 23 cases of operations for gallstones, found micro-organisms present in 18 cases; in the other five instances the bile was sterile.

It has been a matter of some discussion whether the bile acts as a bactericide or if micro-organisms find in the bile a good culture medium. While formerly it was supposed to be antagonistic to the growth of bacteria, it is now demonstrated that a great many pathogenic micro-organisms flourish in it quite vigorously.

Dominici and Rodet found that micro-organisms which cause infection of bile passages thrive in bile media. Maly and Ernich, Leubuscher, Rohman, Bates, Fraenkel and Krause,[5] and Mieczkowski[6] observed that both typhoid and colon bacilli develop well but slowly in human bile.

It has been noted that when bile is thick it specially favors the growth of colon bacilli. Again, Ehret and Stoltz[7] observed that fresh, non-sterilized bile has bactericidal properties and their observations confirm those of Mosse, finding it a poor culture medium. Mignot[8] and Myaki[4] report that colon bacilli live for many months in the gall bladder, there being some lessening in the virulence, but this is readily regained when developed in proper media. There are considerable observations to show that bacteria, like typhoid and colon bacilli, streptococci and staphylococci, which are normally present in the intestine, develop very or moderately well in bile, which, from personal work, I have been able to confirm.

In a contribution of Talma, bile is regarded as a mild bactericide of the colon bacillus and more strongly so for diphtheria and typhoid bacilli. Fütterer[9] and Lauriac found living typhoid bacilli in the gall bladder months and years after an attack of the disease. These observers also claim that the bile contains normally substances which inhibit the growth of a majority of colon and typhoid bacilli.

The number of micro-organisms exerts a great influence on the fate or vitality of the contained micro-organisms, and again the bacterial activity is much more prominent in the gall bladder than in the bile ducts. It is further noted that the epithelium of the bile passages and liver cells resists infections greatly.

The question now arises, How and when does infection of the gall bladder take place? From clinical and experimental observation it is evident that infection occurs principally in two ways—first, by way of the blood, descending, or hematogenous; second, ascending, or by way of the common bile duct; the latter way is observed far more frequently clinically.

The first form is exemplified chiefly by the infections following typhoid fever, the avenue of infection being usually the portal or systemic circulation.

Infection of the gall bladder through contiguous tissues may take place, but it is not very common in human pathology. By reason of its isolated position it is but rarely involved in general infection of the peritoneum.

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

1. Netter: Progrès Médical, 1886, p. 902.
2. Naunyn: Klinik der Cholelithiasis, 1892.
3. Gilbert and Girode: Comptes Rendu Soc. de Biolog., 1890.
4. Myaki: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1900, vol. vi.
5. Fraenkel and Krause: Zeitschr. f. Hygiene, vol. xxxii, 1899, p. 97.
6. Mieczkowski: Quoted in Nothnagel's Encyclopedia of Pract. Med., p. 540.
7. Ehret and Stoltz: Mitt. a. d. Grenzgeb. d. Med. u. Chir., vol. iv, 1900.
8. Mignot: Arch. Gen. de Med., August, 1898.
9. Fütterer: Medicine, 1895.

That the infection is facilitated by an interference with the drainage of the gall bladder is very evident, because so long as there is no obstruction to the flow of bile to cause stagnation the liver is able to excrete large numbers of micro-organisms through the bile. Experimentally the elimination of bacteria by the bile from the general circulation is demonstrated by the researches of Fütterer[9] and Chiari,[11] Myaki[4] and Cushing,[12] in connection with typhoid bacilli; Ferraresi, Quarnesi, with glanders bacilli; Corrado, Nicati, Oemler, Strauss and Chamberland, Oresti, Pernice and Alessi, Bernabei, with staphylococci and pneumococci; Friedlander with anthrax bacilli and cholera spirilla; Blachstein, Letienne, Biedl and Krause and Mengel with streptococci and colon bacilli. Clinically bacteria are demonstrable in the gall bladder in systemic diseases like pneumonia, typhoid, septicemia, pyemia and tuberculosis. The importance of typhoid bacilli in connection with the gall bladder has been specially emphasized in the work of recent years; in most instances the route of passage has been the circulation, but again migration by way of the common bile duct is very probable in certain cases. In connection with typhoid fever the typhoid bacilli have been demonstrated in the gall bladder by Chiari,[10] Naunyn,[11] Chauffard, Cushing,[12] Welch, Sailor,[13] Stockton[24] and others, both in a pure state and associated with other bacteria. In many instances the bacilli were found a long time after the typhoid infection; by Welch, three to four months; Miller,[15] seven years; von Dungern,[16] 14½ years; Groba,[17] 17 years, and Hunner,[18] 18 years after an attack. Flexner states that 50 per cent. of the cases of typhoid at autopsy contain typhoid bacilli in the gall bladder, and Keen reports 75 cases of typhoid bacillus infection of the gall bladder in typhoid fever. Again, typhoid bacilli have been in the gall bladder without any previous history at all of typhoid infection. It is thus illustrated that typhoid bacilli may exist dormant a long time in the gall bladder and yet retain their vitality and virulence.

There is little doubt but that the ascending form of infection of the gall bladder by way of the common bile duct is unquestionably the more frequent; and this is certainly the more common mode of invasion observed clinically, which is usually an extension of inflammation from the duodenum. The kinds of micro-organisms found correspond to those naturally inhabiting the small intestine, the colon bacillus always predominating.

EXPERIMENTS.

That any obstruction of the bile facilitates this migratory infection is shown by frequent illustrations. So long ago as 1876 Charcot and Gombault[19] found stones and bacteria in bile after ligating the common duct in dogs. Netter[20] in 1886, after aseptic ligature of the common duct in rabbits, obtained cultures of bacteria from bile. "In ligation of the common duct above the ampulla it takes but a few days before the same organisms appear in the bile and liver which are present normally in the duodenum and in that portion of the common duct distal to the ligature. Even injection of bacteria below the point of ligation is followed by passage through the ligature. In personal experiments I have noted that infection into the gall bladder of very virulent bacteria, as pneumococci and colon bacilli, when the flow of bile was not interfered with, was always without serious consequences. The introduction of aseptic foreign bodies in connection with bacteria greatly favors the growth of the bacteria injected. In the experiments of Ehret and Stoltz[7] this increase in the number was found to be progressive, as the bile was examined from time to time. The conclusion to be drawn from this is that under normal conditions, if the gall bladder is free from stones and foreign bodies, it contracts and empties its secretion, which goes unhindered to the intestine; but when foreign aseptic bodies or gallstones are present the normal muscular action of the organ is interfered with, and a certain amount of bile becomes stagnant between the foreign bodies and greatly favors the growth of bacteria.

The rôle of gallstones in promoting infection of the gall bladder is purely contributory, and we know also that they may lie in the gall bladder a lifetime and no symptoms be produced until the bile becomes infected. From present knowledge we are able to state that any interference with the contractility of the gall-bladder musculature, or presence of foreign bodies in the gall bladder, or ligation of the common duct, disturbances that affect the circulation, or secretion of bile, causes a marked increase in the number of micro-organisms in the biliary passages, and, furthermore, that aside from the infective agent, a number of predisposing influences are still necessary to produce inflammation of the gall bladder.

CLASSIFICATIONS.

Clinically cholecystitis is divided into acute, subacute and chronic forms; anatomically into catarrhal, suppurative, phlegmonous, diphtheritic, gangrenous and fibrous (adhesive or obliterative). A further division is permissible in calculous and non-calculous by reason of the frequent association of gallstones with cholecystitis. The acute inflammation occurring in typhoid fever with the presence of a pure culture of the bacillus typhosus constitutes the classic instance of uncomplicated cholecystitis. The micro-organisms that are associated etiologically with cholecystitis aside from the typhoid bacillus, are the colon bacillus, streptococcus, staphylococcus pneumococcus, proteus vulgaris, and tubercle bacillus.

In most instances the severity of the resulting inflammation is simply indicative of the degree of virulence of the infective agent and presence of conditions lowering the physiologic resistance of the tissues. The non-calculous form of cholecystitis rarely progresses beyond the purulent state. An obstruction of the cystic duct produces the so-called empyema. The severer forms of cholecystitis are usually attended by the presence of gallstones; these assert their influence on the inflammation by pressure on the tissues, obstruction of the bile or disturbance in the circulation, and may give rise to fulminating suppurative cholecystitis, diphtheritic, phlegmonous, ulcerative or gangrenous inflammation, which then sometimes leads to perforation and pericholecystitis, there being no doubt that gallstones promote infections often of the gravest character.

Musser states that suppurative cholecystitis is based altogether on preceding development of gallstones and parasitic invasions.

10. Chiari: Zeitschr. f. Heilkunde, vol. xv, p. 169.
11. Naunyn: Klinik der Cholelithiasis, 1892.
12. Cushing: Johns Hopkins Hosp. Bull., May 1898, p. 91; August and September, 1899.
13. Sailor: Medicine, May, 1902.
14. Stockton: American Medicine, Dec. 21, 1901.
15. Miller: Johns Hopkins Hosp. Bull., vol. ix, p. 95, 1893.
16. Von Dungern: Münch. med. Woch., 1897, p. 699.
17. Groba: Wiener klin. Woch., Nov. 9, 1899.
18. Hunner: Johns Hopkins Hosp. Bull., September, 1899.
19. Charcot and Gombault: Archiv. de phys. norm. et path., 1876.
20. Netter: Progrès Médical, 1886, p. 992.

The principal factors concerned in the production of a gangrenous cholecystitis are: (*a*) Thrombosis of nutrient vessels; (*b*) bacterial infection; (*c*) absence of drainage and consequent tension. The chronic fibrous (obliterative-adhesive) form of cholecystitis while indirectly due to bacterial invasions, is yet not more than the sequel of a prolonged catarrhal or suppurative inflammation or some of the more severe destructive forms.

The close association of cholecystitis and cholelithiasis is apparent to every clinician, and accordingly that which pertains to the etiology of gallstones will be contributory and in most instances causative of cholecystitis. Yet gallstones are not always present in connection with cholecystitis and gallstones may exist without inflammation. In a certain percentage of cholethiasis cases the contents of the gall bladder are sterile and fail to reveal any definite infective agent.

In the study of the causes of gallstones it is very evident that while our knowledge is much more complete than it was a decade or two ago, it is equally certain that no common etiologic factor has been demonstrated that is applicable to all cases, and the importance of a union of several contributory conditions is not to be overlooked. Among the predisposing influences that we have come to associate with gallstones are age, sex, pregnancy, indolence, gluttony and constipation. Cholelithiasis is very rare in early adult life and occurs most frequently after the age of forty. That it is far more frequently a disease in women than in men is noted by all observers, different writers giving a proportion of from three to one and five to one when compared with its occurrence in the male. It is so common, in fact, in women that it may be said to be characteristic of the sex, and is, like the floating kidney, distinctly peculiar to women. In seeking an explanation for this greater frequency we find it in the influence of child-bearing, prevalence of tight lacing, greater tendency to sedentary habits and constipation, all influences which constrict or encroach on the area of the gall bladder and interfere with its drainage.

The two classes of men that are affected with gallstones principally are first, the obese, and second, the glutton and he who is peculiarly indiscreet in connection with dietary rules. That certain diseases are contributory to the development of gallstones is also a matter of common experience. The relation of cholecystitis has been referred to, and in this connection, of course, typhoid fever occupies a prominent rôle, and all those gastric and intestinal disorders which by extension lead to cholecystitis.

Furthermore, heart disease predisposes probably by reason of the inactive life and passive congestion of the liver which the cardiac disease engenders. The conditions of gout and diabetes also seem to dispose to their formation. Cancer of the biliary passages is so commonly associated with gallstones that it must be regarded as having a predisposing influence. Mosher found nephritis associated with gallstones in 72 per cent. of his cases, and the fatal issue in operation for gallstones can often be attributed to the complicating nephritis. Adiposity, with its sedentary mode of life, and constipation are prominent predisposing factors.

Cholelithiasis has come to be regarded as closely associated usually with some structural change in the lining of the gall bladder, so that the etiology of cholecystitis and cholelithiasis have many points in common. The relation of bacterial invasion of the gall bladder and direct connection of bacteria with the formation of gallstones has received very prominent consideration. Among the earliest contributions on the subject were those of Charcot and Gombault[19] in 1876. Netter and Martha,[21] in 1886, finding staphylococci and streptococci in connection with gallstones; Brieger and von Leyden, in 1886, with colon bacilli. Naunyn,[2] in 1891, found colon bacilli in connection with stones. Welch, in 1892, isolated bacteria from the center of gallstones, principally typhoid and colon bacilli. Crude substances, silk ligatures (Homans,[22] Kehr[23]) have also been found to occupy the center of gallstones.

The French observers, Mignot, Fournier and Gilbert,[24] have developed experimental cholelithiasis in animals and found that in order to produce a calculus it is necessary to have infection of the biliary passages. Cushing,[12] M. W. Richardson,[25] and Lartigau[26] have also successfully produced gallstones in animals by promoting a mild infection in the gall bladder by the use of attenuated cultures of typhoid and colon bacilli.

The nidus in most instances is composed of mucus, degenerated epithelium or shreds of tissue so that in a majority of cases the nucleus of a stone is composed of bacteria or the results of bacterial infection of the gallbladder mucosa.

Chemically gallstones consist chiefly of calcium salts with bilirubin and cholesterin, and of the salts carbonates and phosphates are most common. They have a framework of organic matter which is impregnated by the other materials. A large number are pure cholesterin masses. The question naturally arises as to the source of these constituent materials and the influences that promote their increase in the gall bladder.

Cholesterin occurs normally in the blood and various organs of the body, and is present in the bile in a proportion, according to different authors, of from .045 to 1.18 per cent. There is really no proof that the liver excretes cholesterin from the blood or that it is the result of hepatic metabolism, so we are driven to the conclusion that it is formed in the bile ducts or gall bladder, yet it is found in passages where bile does not exist, hence there is no reason to believe that it is formed from any constituent of bile. According to Naunyn,[2] it is rather a product of the epithelium of the bile passages; in fact, it is a secretion of mucous membranes generally. C. A. Herter[27] finds that the normal amount of cholesterin secreted by the epithelial cells of the gall bladder is trebled under pathologic conditions, which is also true of calcium salts, both substances being increased by the same irritants. This is significant, for if calcium increases beyond a certain point it is liable to combine with bilirubin and produce a compound known as bilirubin-calcium, which forms the nucleus of a great many stones.

There seems to be no doubt that catarrh of the mucous membrane of the bile passages increases the amount of cholesterin present, and the longer the bile remains in the gall bladder the more cholesterin it will contain. So that anything which causes stagnation of bile, as the

21. Netter and Martha: Archives de physiol. norm. et path., 1886.
22. Homans: Annals of Surgery, 1897, vol. xxvi, p. 114.
23. Kehr: Münch. med. Woch., 1902.
24. Mignot, Fournier and Gilbert: Arch. Gen. de Med., August and September, 1898.
25. Richardson, M. W.: Boston Med. and Surg. Jour., Dec. 2, 1897.
26. Lartigau: Quoted by Musser, Internat. Clinics, vol. iii, 1903, p. 34.
27. Herter, C. A.: Symposium Congr. of Am. Phys. and Surgs., May 13, 1903.

remote causes formerly mentioned, like age, sex, habits, dress, diet, diathetic conditions and disease processes, predispose to the formation of gallstones. Catarrh of the gall bladder may cause both of the above conditions in that it leads to stagnation of the bile by (1) producing a paresis of the muscular coat, and (2) by increasing the amount of cholesterin present. All of which adds emphasis to the fact that the normal gall bladder can not form stones and only a diseased gall bladder can form them or aid in their formation.

After gallstones are once present they increase in number and size, which is indicative of the formation of an increased amount of cholesterin in the gall bladder. In a recent case of my colleague, Dr. Jepson, he observed distinct layers of cholesterin crystals on the surfaces of the stones as they still lay in the gall bladder

Some interesting observations have been reported recently regarding the constitutional origin for an increased formation of gallstone constituents. C. A. Herter[27] fed dogs on fat almost entirely and at the end of three months minute masses of bilirubin calcium were formed in the gall bladder, and in one instance a distinct concretion. It is important to note the possibility of increasing the quantity of cholesterin by means of chemical irritants without the presence of infection. It is likewise possible that constitutional conditions may bring about such changes in the bile that it may cause irritation to the bile passages and thus play an important part in the pathogenesis of gallstones.

The influence of diet was formerly accorded considerable significance, but it is by no means proven that the amount of cholesterin is in any way dependent on the diet. Jankan and Thomas[28] have shown experimentally that diet has no influence on the percentage of cholesterin in the bile.

From the accumulated experimental and clinical knowledge on the pathogenesis of gallstones we can make the deduction that while the essential cause usually is a cholecystitis, there are evidently always other factors at work beside infections, and special consideration must be given to those infectious diseases and states of altered metabolism which promote a change in the quality of the bile chemically, so as to constitute an irritant (Herter).

It is further evident that cholecystitis and cholelithiasis are at all times secondary affections, and if it were possible to eliminate such influences as age, improper wearing apparel, lethargic habits, constipation, gastric and intestinal catarrhal disorders, cholelithiasis would soon become a very rare disease.

28. Jankan and Thomas: Quoted by Naunyn, Klin. der Cholelithiasis, 1892.

THE RELATION OF CHOLELITHIASIS TO DISEASE OF THE PANCREAS.

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The intimate relation of pancreatic disease to lesions of the liver is forecast in the embryo at a time when that part of the pancreas which will subsequently contain the larger pancreatic duct makes its appearance as two diverticula situated beside the embryonic hepatic duct where it enters the intestine. One of these rudimentary structures disappearing, the duct of Wirsung, which will subsequently become the outlet for almost the entire pancreatic secretion, enters the intestine in conjunction with the common bile duct. The smaller duct of the pancreas, the duct of Santorini, has its origin in an embryonic diverticulum situated nearer the stomach. The two parts of the gland subsequently unite to form the adult organ, but the two ducts are subject to considerable variation, differing in their relation to one another and to the common bile duct.

Anatomic peculiarities which have an important bearing on the relation of the liver to the pancreas may be recalled: 1. In one of ten individuals the duct of Wirsung does not join the common bile duct before it enters the duodenum, but the two ducts terminate side by side at the summit of the bile papilla. 2. In the majority of individuals the duct of Wirsung which terminates in the bile papilla is larger than the duct of Santorini, which terminates nearer the stomach, but in approximately one of ten instances the duct of Santorini equals or exceeds in size the duct of Wirsung. 3. In approximately nine-tenths of all cases the two ducts anastomose within the gland, but in a large proportion of these instances they are united by such a narrow twig that one is not capable of acting as an outlet for the secretion of the other.

The physiologic significance attributable to the close anatomic relation of the biliary and pancreatic ducts has recently been emphasized by Pawlow[1] and his students. Their experiments, confirming the observations of other physiologists, have demonstrated that the bile affords a favorable medium for the action of the pancreatic ferments, increasing their digestive efficiency two or threefold. The presence of bile has been found particularly favorable to the action of the fat-splitting ferment of the pancreatic juice. The same observers have shown that the bile and pancreatic juice are simultaneously poured into the intestine, the flow of each being increased and diminished by the same factors. Considerable importance, therefore, may be attached to the fact that the two secretions are mixed even before they enter the intestine. The increased efficiency of the pancreatic ferments in the presence of bile doubtless explains in part the severity of the lesion which results when bile finds its way into the pancreatic ducts.

The junction of the common bile duct with the larger duct of the pancreas serves to explain a variety of acute and chronic lesions of the pancreas, which occur in association with the presence of calculi in the bile passages. Such lesions may follow the impaction of a gallstone in the common part of the biliary and pancreatic ducts, or may be the result of an inflammatory process caused by the presence of gallstones in the bile passages and hence transmitted to the ducts of the pancreas.

HEMORRHAGIC PANCREATITIS.

Those who have described the lesion known as acute hemorrhagic pancreatitis have not failed to note its association with cholelithiasis. From the literature I have previously collected and tabulated[2] a considerable number of cases in which this lesion, often accompanied by jaundice, has been associated with gallstones present in the gall bladder or in the bile passages. In seven of these cases a calculus, found at autopsy in the terminal part of the common bile duct, had doubtless exerted a deleterious influence on the pancreas. A case[3]

1. The Work of the Digestive Glands. (Translation.)
2. Pancreatic Disease, Its Cause and Nature, Philadelphia and London, 1903.
3. Bulletin of the Johns Hopkins Hospital, 1901, vol. xii, p. 182.

which I have described in detail has demonstrated a mechanism by which bile is diverted from its usual outlet and forced into the pancreatic duct. A very small calculus occluding the duodenal orifice of the diverticulum of Vater had converted the two ducts into a continuous channel through which bile forced by the gall bladder was injected into the pancreas. The ducts of the gland, where spared by the extensive hemorrhagic lesion which resulted, were stained by bile. A series of experiments performed on dogs demonstrated that the bile of one animal injected into the pancreatic duct of a second causes typical acute hemorrhagic pancreatitis, accompanied by disseminated fat necrosis. That bile injected into the pancreatic duct is capable of producing these lesions experimentally has been further shown by Flexner and Pearce,[4] and very recently by Hewlett.[5] Especially noteworthy is the fact that acute hemorrhagic pancreatitis occurs in the absence of bacterial infection, and in the case due to impaction of a calculus just cited, careful bacteriologic examination of the pancreas gave negative results.

In this connection it is of interest to note that Claude Bernard,[6] nearly fifty years ago, injected bile mixed with oil into the pancreatic duct of a dog, causing death within eighteen hours. The autopsy, he says, showed an intense peritonitis, and the tissue of the pancreas, which had a red color, exhibited numerous ecchymoses. It is not improbable that the lesion thus produced was hemorrhagic pancreatitis.

During the past few years many cases of acute hemorrhagic pancreatitis have been described and especial attention has been directed to the condition of the bile passages. A considerable number of instances give confirmatory evidence of the frequent association of cholelithiasis and pancreatic disease. Such cases not included in my table previously mentioned have been described by Tornqvist,[7] Flynn,[8] Halley,[9] and Shäcker.[10]

Of especial interest is the case of Tornqvist. Three weeks before death the patient passed by rectum a gallstone the size of a pea. At autopsy the pancreas was the seat of hemorrhagic and gangrenous inflammation; the gall bladder, ductus hepaticus and ductus choledochus contained calculi, two of which, the size of beans, were wedged in the diverticulum of Vater. In this instance it is difficult to decide whether the lesion was caused by these stones, or, perhaps, by the calculus which was passed several weeks before death.

No data at present available indicate with how great frequency acute hemorrhagic pancreatitis is caused by gallstones. In four of five cases which have come under my observation this association has existed. Other etiologic factors have been suggested, but direct evidence in favor of their occurrence is wanting. In many cases, doubtless, gallstones have been overlooked at autopsy. In a number of cases, however, their presence has been excluded by careful examination of the biliary tract. Such cases, for example, have been recently described by Lando[11] and by Pond;[12] in one case which I have examined no calculi were found. It is possible that the bile passages may have contained a single calculus which, causing the lesion, had escaped into the intestine. Pearce[13] has described an instance of the disease which illustrates this possibility. Two weeks before death jaundice had been present. Hemorrhagic and gangrenous pancreatitis was accompanied by fat necroses; no calculi were found in the gall bladder, gall ducts or intestine, but the orifice of the bile papilla was dilated, and in the common bile duct, one centimeter from its termination, occurred a circular dilatation one and a half centimeters in circumference, thus suggesting that a stone had previously occupied this position. This case resembles closely an instance of hemorrhagic pancreatitis described by Thayer;[14] the orifice of the common bile duct was widely dilated and a calculus was found within the duodenum.

Calculi found in the gall bladder at autopsy suggest that hemorrhagic pancreatitis has been caused by their presence, even though none is found in the diverticulum of Vater, but their complete absence does not give conclusive proof that the lesion is not referable to cholelithiasis. It is not improbable that a pancreatic calculus impacted at the orifice of the diverticulum of Vater might cause the lesion, but such an instance has not been recorded.

The most characteristic feature of acute hemorrhagic pancreatitis occurring spontaneously or produced experimentally in animals is widespread necrosis affecting both parenchyma and interstitial tissue of the gland. The so-called gangrenous pancreatitis represents a later stage of the hemorrhagic lesion, when, doubtless as the result of bacterial invasion, the tissue infiltrated with blood has assumed a black color and has perhaps become softened; evidence of previous hemorrhage is frequently demonstrable. Peritonitis limited to the lesser peritoneal cavity is usually present. Among the cases in which the pancreas has been regarded as gangrenous gallstones are frequently found in the bile passages at autopsy, and the passage of a calculus is doubtless responsible for the pre-existing hemorrhagic lesion.

Cases of this character have been recently described by Deaver,[15] Mayo Robson[16] and Baldwin.[17] The following case may be added to the list of those in which acute pancreatitis of grangrenous type has accompanied cholelithiasis:

Case 1.—The patient, a man, aged 37, was admitted to the service of Dr. Halsted in the Johns Hopkins Hospital.

Present Illness.—The present illness began seven months previously with pain in the epigastrium, accompanied by vomiting, which lasted two days. The pain disappeared and the patient was well for four months. A second attack began two weeks before admission, with epigastric pain, vomiting and constipation; chills occurred.

Examination.—There was no jaundice, but swelling in the region of the gall bladder was noted. On admission there was slight distension of the abdomen in the epigastric region, to the left of the median line; slight spasm of the muscle was present in the epigastric region and on palpation an indistinctly defined mass was felt.

Blood Count.—The red blood corpuscles numbered 1,400,000, the leucocytes 33,700.

Treatment.—An exploratory laparotomy was performed on the day following admission; death occurred four days later. The temperature varied from 101 to 104.

Postmortem.—An autopsy was performed by Dr. R. Van Wart through the wound made at operation. After cutting through the transverse mesocolon the lesser peritoneal cavity was found to contain dark red semifluid blood, together with

4. Univ. of Pennsylvania Med. Bull., 1901, vol. ix, p. 743.
5. Jour. Med. Research, 1904, vol. xi, p. 377.
6. Leçons de physiologie expérimentale, Paris, 1856, vol. ii, p. 278.
7. Nordiskt medicinskt Arkiv., 1903, vol. xxxvi, p. 1.
8. Yale Med. Jour., 1904, vol. x, p. 237.
9. Scottish Med. and Surg. Jour., 1904, vol. xiv, p. 52.
10. Inaug. Diss., Giessen, 1902.
11. St. Paul Med. Jour., 1903, vol. v, p. 21.
12. Medical Herald, 1903, vol. xxii, p. 446.
13. Albany Med. Annals, 1904, vol. xxv, p. 389.
14. Boston Med. and Surg. Jour., 1889, vol. cxxi, 506.
15. Amer. Jour. of the Med. Sciences, 1903, vol. cxxv, p. 187.
16. Lancet, 1904, vol. i, pp. 847-850.
17. The Journal A. M. A., 1904, vol. xiii, p. 1354.

particles of firm, opaque, grayish-white material. A perforation with fairly smooth edges 1½ centimeters in diameter was present in the wall of the transverse colon. Two perforations through the posterior wall of the stomach and two through the wall of the duodenum communicated with the abscess cavity. The greater part of the head of the pancreas had the appearance of the normal gland, but the remainder consisted of grayish, opaque friable material, having a fecal odor; here and there occurred areas of hemorrhage. The duct of Wirsung and the common bile duct united to form a diverticulum of Vater 1 centimeter in length. The bile ducts contained no calculi, but in the gall bladder were nine facetted gallstones of small size, the largest being only 5 millimeters in diameter.

The symptoms of acute hemorrhagic pancreatitis have been so carefully described by Fitz and by other writers that it is not desirable to review them here. Since this pancreatic lesion may become a complication of gallstone colic, the distinctive peculiarities of the former are important. The intensity of the pain, its diffuse epigastric character, with occasional localization on the left side, and the profound prolapse usually present, according to Thayer,[18] give evidence that the pancreas is implicated. The following case, which has recently come under my observation through the kindness of Dr. P. H. Ingalls, may be cited as an illustration of the course of rapidly failing pancreatitis:

CASE 2.—A man, aged 47 years, who gave no history of gallstones, was suddenly seized at midday with intense pain in the upper part of the abdomen. A few hours later the features were drawn, the skin was clammy, and the pulse rapid and feeble. There was continued hiccough. During the following night vomiting began, and persisted with considerable severity. The abdomen was tender on pressure and was slightly distended immediately below the sternum. On the third day after the onset of symptoms the temperature rose to 104, and death occurred only three days after the beginning of the attack.

Postmortem.—At autopsy the pancreas was found much enlarged, and, save for scattered patches of relatively normal tissue, had a nearly uniform reddish-black color. The omentum was studded with foci of fat necrosis. The gall bladder contained a single large calculus, about 2 centimeters in diameter.

DIAGNOSIS OF HEMORRHAGIC PANCREATITIS.

The foregoing has shown, I believe, that cholelithiasis is the usual, if not the only, cause of acute hemorrhagic pancreatitis. The diagnosis of this often obscure condition may be aided by evidence which tends to establish the existence of cholelithiasis. A history of previous attacks of gallstone colic is, therefore, important. In many instances the fatal attack is accompanied by jaundice, which is doubtless due to impaction of a calculus at the duodenal orifice of the common bile duct. Since such impaction prevents the entrance into the intestine of both bile and pancreatic juice, well-marked digestive disturbances, particularly the presence of undigested fat in the stools, are to be expected, and in two of my cases the stools or the contents of the large intestine at autopsy have had a grayish-white or clay-like color. In cases of which the symptoms suggest acute hemorrhagic pancreatitis much importance might be attached to the discovery in the feces of a calculus of such small size that it could occlude the duodenal orifice of the diverticulum of Vater without filling its cavity. For this purpose the evacuations in cases which are not rapidly fatal should be carefully examined.

Recent studies offer hope that the diagnosis of acute hemorrhagic pancreatitis with fat necrosis may be facilitated by examination of the urine. Several years ago I suggested that the fat-splitting ferment of the pancreatic juice is with these lesions excreted by the urine and described a case[19] in which a reaction indicating its presence was obtained with the urine. By a careful experimental study, Hewlett[20] has shown that this fat-splitting ferment appears in the urine of dogs with acute hemorrhagic pancreatitis produced experimentally. Cammidge[21] has lately described a reaction which is, he believes, peculiar to the urine of those suffering with pancreatic disease.

The etiologic relation of gallstones to acute hemorrhagic pancreatitis makes obvious the importance of their removal when, at operation, the presence of fat necrosis directs attention to the existence of pancreatic disease. For even though that calculus which has caused the lesion has finally escaped into the intestine, anatomic conditions being such as favor the occurrence of the disease, the passage of another stone may cause a recurrence of the hemorrhagic lesion. Should a calculus be found within the diverticulum of Vater, its removal is imperative.

In a case operated on by Dr. Howard A. Kelly recovery followed the removal of a large number of small calculi from the gall bladder. In a case described by Wiener[22] fat necrosis found at operation, two days after the onset of symptoms, gave evidence of acute pancreatic disease; a calculus was removed from the cystic duct, cholecystectomy was performed, and recovery followed.

SUPPURATIVE PANCREATITIS.

Several recorded cases demonstrate that acute suppurative pancreatitis may be a consequence of cholelithiasis. There can be little doubt that the lesion, like suppurative inflammation elsewhere, is caused by the invasion of micro-organisms, and in several ways the presence of calculi may favor such invasion. Partial occlusion of the pancreatic duct by a calculus lodged in the diverticulum of Vater may favor the entrance of bacteria into the duct from which pancreatic secretion can not readily escape. The probability of infection is much increased when the presence of biliary calculi have previously caused a suppurative inflammation of the bile passages. Mayo Robson[16] has recently described two cases in which abscess of the pancreas accompanied cholelithiasis with suppurative cholangitis. In certain instances pancreatic abscess is, perhaps, the result of infection secondary to localized hemorrhagic pancreatitis caused by a gallstone lodged in the diverticulum of Vater. Especially interesting is a case recorded by Fuchs.[23] A man aged 32 years had suffered with recurrent attacks of abdominal pain, accompanied by vomiting, and on one occasion by jaundice. At operation a calculus said to have been the size of a bean was found within the diverticulum of Vater, while in the head of the pancreas was a small abscess. Removal of the calculus was followed by recovery. In an example of suppurative pancreatitis recorded several years ago by Deickhoff,[24] biliary calculi had actually found their way into the duct of Wirsung.

CHRONIC INTERSTITIAL PANCREATITIS.

Chronic inflammation of the pancreas is a more common complication of cholelithiasis than the acute lesions previously mentioned. Reidel[25] first directed attention

18. Amer. Med., 1901, vol. ii, p. 826.

19. Bulletin of Johns Hopkins Hospital, 1902, vol. xiii, p. 117.
20. Jour. of Med. Research, 1904, vol. xi, p. 337.
21. Lancet, 1904, vol. i, p. 782.
22. New York Med. Jour., 1903, vol. lxxvii, p. 889.
23. Deutsche med. Woch., 1902, vol. xxviii, p. 829.
24. Festschrift f. Thierfelder, Leipzig, 1895.
25. Berliner klin. Woch., 1896, vol. xxxiii, pp. 1, 32.

to the indurated condition of the head of the pancreas not infrequently encountered at operation undertaken for the removal of gallstones, and pointed out its resemblance to carcinoma, for which it has been repeatedly mistaken. In three of 122 operations the head of the pancreas exhibited such dense induration that malignant growth was suspected; in two patients recovery followed, while in the third chronic interstitial pancreatitis was demonstrated by autopsy. Mayo Robson[26] has given especial attention to the occurrence of chronic pancreatitis recognizable at operation by well-marked induration of the gland, and Robson and Moynihan[27] have described seven instances in which jaundice and other symptoms of biliary colic have suggested the presence of gallstones. Calculi, however, were found in only two of these cases, in one of which it was possible at autopsy to demonstrate that the induration noted at operation was the result of chronic inflammation.

A case which I have recorded[28] demonstrates that a large calculus impacted within the diverticulum of Vater may cause chronic interstitial pancreatitis. I have shown that a small calculus, on the one hand, lodged at the duodenal orifice of the diverticulum of Vater can cause acute hemorrhagic pancreatitis by diverting bile into the pancreatic duct. A larger calculus, on the other hand, occludes both ducts and causes an interstitial inflammation similar to that which follows ligation of the pancreatic duct in animals. In six cases described by Moynihan[29] induration of the pancreas has been associated with the presence of calculi lodged in the common bile duct.

Doubtless, however, chronic interstitial pancreatitis may be caused by cholelithiasis even though the pancreatic duct is not obstructed by a calculus impacted in the terminal part of the common bile duct. An acute inflammation of the bile passage due to the presence of calculi in the gall bladder or elsewhere may be transmitted to the pancreas by way of its larger duct, and may finally cause chronic changes in the gland. In two cases which I have studied at autopsy chronic pancreatitis accompanied suppurative cholangitis with cholelithiasis, though no calculi were found compressing or occluding the pancreatic duct. In one of these cases the history of the patient gave no evidence that calculi had passed from the gall bladder to the intestine. In both cases the ducts of the pancreas were the seat of acute inflammation, which probably had its origin in the acutely inflamed biliary passages.

I have previously confined my attention to cases in which changes in the pancreas have been secondary to lesions of the biliary passages. Mayo Robson has described a group of cases in which chronic interstitial pancreatitis has caused, he believes, such compression of the common bile duct that jaundice has resulted. In these cases the pancreas has been found at operation unusually hard, and though jaundice has been present, no calculi have been demonstrable within the bile ducts. The common bile duct, it is well known, lies in contact with the head of the pancreas, and in 62.5 per cent. of individuals, according to Helly,[30] it is completely surrounded by pancreatic tissue. Pourtoy[31] has described a case in which a sharply localized focus of chronic pancreatitis, obscure in origin, had caused constriction of the common bile duct with jaundice. In none of the cases collected by this writer has dissection demonstrated that a diffuse chronic inflammation of the head of the pancreas is capable of causing jaundice by constricting the bile duct.

Chronic pancreatitis caused by cholelithiasis produces no symptoms which, with our present knowledge, make its presence recognizable. Mayo Robson finds that tenderness in the epigastrium, together with some fullness above the umbilicus, are usually present; loss of weight, he says, becomes marked, and pain may be present to the left of the median line, perhaps in the region of the kidney, or even below the scapula. For recognition of the condition, Robson attaches much importance to a reaction which Cammidge has recently described. What influence the occurrence of chronic pancreatitis exerts on the course of cholelithiasis is as yet obscure. Its importance lies in the fact that induration of the head of the pancreas observed at operations undertaken for the removal of gallstones may be mistaken for malignant growth. After removal of calculi the pancreatic lesion does not, in some cases at least, cause further serious harm.

CONCLUSION.

The following conclusion is, I believe, justified by the facts which have been cited: Whenever a biliary calculus passes through the diverticulum of Vater into the duodenum the pancreas is subjected to the danger of injury, the character and extent of which are dependent on the size of the calculus and the duration of its impaction.

26. Lancet, 1900, vol. ii, p. 235.
27. Disease of the Pancreas, Philadelphia and London, 1903.
28. Amer. Jour. of the Med. Sciences, 1902, vol. cxxiii, p. 845.
29. Lancet, 1902, vol. ii.
30. Arch. f. mik. Anat., 1898, vol. iii, p. 773.
31. Thesis, Lyon, 1903.

DISEASES OF THE GALL BLADDER AND BILE DUCTS IN RELATION TO DISEASES OF THE GASTROINTESTINAL TRACT.*

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Owing to the close anatomic proximity of the gall bladder and bile ducts to certain portions of the gastrointestinal tract, disease of one of these structures may be readily transmitted to the other. The symptoms arising from disease of these parts are often hopelessly confused, as illustrated by the difficulty at times in differentiating cholelithiasis and gastric ulcer. No wonder, for, as Fleiner states in effect, one may well say gallstone disease may not only simulate all of the diseases of the gastrointestinal tract, but it may produce them, namely, stomach cramp, intestinal colic, vomiting, diarrhea, bloody vomit, bloody stools, symptoms of ulcer, actual ulceration, tumor, stenosis of the pylorus, duodenum and colon, gastric hypersecretion and tetany.

The disorders of the stomach and intestine arising from disease of the gall bladder and bile ducts may be conveniently divided into those nervous or reflex in origin, and those due to a direct extension of the anatomic disease.

NERVOUS OR REFLEX DISORDERS.

These may be sensory, motor and secretory.

Sensory and Motor Disturbances.—I will simply refer to the nausea, eructation and vomiting that accompany nearly every attack of biliary colic. The nausea and vomiting may be purely reflex, brought about by the irritation of the nerves involved in the gall-bladder and bile-tract disease. In many cases, however, a di-

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

rect effect is produced on the gastric muscle reflexly. A temporary relaxation of muscular tone arises, as evidenced by distended epigastric region, a high tympanitic percussion note over the self-inflated stomach. A temporary gastric myasthenia or reflex relaxation may persist for several days. This accounts for the feeling of epigastric distension, pressure and weight, so frequently complained of after the acute colic has subsided. In many cases direct extension of inflammation to the pylorus or duodenum is the cause of similar clinical manifestations. A paretic condition of the muscle of the intestinal tract is frequently evidenced by diffuse abdominal distension, during and subsequent to an attack of cholecystitis. Siredey has reported a case of paralytic ileus arising reflexly from the irritation of a gallstone in the common duct. Rarely a reflex diarrhea is said to occur. It might be difficult in a given case to determine that the diarrhea was due entirely to the colic.

Reichmann claims that gallstones may give rise to gastralgia, and that they may reflexly cause cramps of the pyloric and cardiac muscles. While this can not be denied, it is more than probable that such pains are for the most part due directly to local anatomic conditions, such as adhesions, obstruction, etc.

Secretory Disturbances.—It is stated by most authors that cholelithiasis is accompanied by excessive gastric acidity or hyperchlorhydria. This statement does not seem to be based on the results of a systematic stomach analysis of any large series of cases. It is worthy of note that of the relatively limited number of cases of pyloric obstruction due to cholelithiasis that have been accurately reported, lactic acid was present in the stomach contents of several cases. This is interesting when we remember that non-malignant stenosis in general is rarely associated with the presence of the lactic acid.

Finally, it may be said of the nervous disorders, that the functional activity of the stomach and intestine is influenced in a reflex way by disease of the biliary tracts, but no serious permanent effect is likely to result. On the other hand, the direct extension of anatomic disease from the bile tracts to the stomach and intestine may be fraught with most serious consequences.

ANATOMIC DISEASE.

The readiness with which disease is liable to extend from one of these parts to the other is appreciated when one bears in mind the anatomic relations. About two inches from the pylorus the duodenum lies directly behind the neck of the gall bladder; above and behind it are the cystic and common bile ducts. The common duct passes directly behind and to the inner side of the descending portion of the duodenum, into which it empties. The gall bladder and bile tracts are thus in very close contact to the first five inches of the duodenum. Both structures are more or less firmly fixed, so that this relation is constant. The hepatic flexure of the colon is so near the right side of the gall bladder that after death it is frequently found stained with bile. The remaining portion of the intestine is more or less removed from the biliary tracts, and hence it is that the pyloric end of the stomach, the first and second portions of the duodenum, and the hepatic flexure of the colon are the parts most frequently involved by direct extension of disease from the gall bladder and bile ducts. As to the frequency of such complications, the statistics of Hildenstab show that of 320 cases operated on for cholelithiasis, 30 had pronounced stomach symptoms

This paper will discuss the pathologic conditions of the stomach and intestine that result from cholelithiasis, cholecystitis and cholangitis. The effect of malignant and other disease will not be considered.

The rôle played by cholangitis is so slight that it deserves merely mention. Langenbuch claims that adhesions may arise from a simple cholangitis due to bacterial invasion from the blood and from the duodenum.

Cholelithiasis and cholecystitis may produce gastrointestinal disorders by causing, first, simple adhesions; second, obstruction to the lumen of the digestive tract due to inflammation and its results; third, fistulous communications; fourth, ileus due to gallstones.

As to the frequency of adhesions due to cholecystitis, exact statistics are wanting. According to Riedel, adhesions occur in 75 per cent. of all cases. In 128 gallstone operations, collected by Merk, adhesions were present in 38 per cent. of cases. According to Riedel, in 55 subjects showing an abnormal gall bladder at postmortem, adhesions were present in 25 per cent. of cases The same author concludes as a result of an extended study of adhesions that, so long as the gallstones are in the gall bladder, the adhesions are usually confined to the omentum and transverse colon; if a stone wanders into the cystic or common duct, adhesions to the stomach in the region of the pars pylorica are likely to take place: the duodenum is usually the last to be drawn in by the plastic exudate.

Simple adhesions, when not producing obstruction, rarely cause serious symptoms. A few cases have been reported in which gastralgic pains, apparently due to adhesions, were relieved by operation. If the colon is extensively involved, constipation may result. This, however, seems to be a rare effect.

Clinically, duodenal and pyloric obstruction are by far the most common and serious pathologic conditions that arise.

As to frequency, in 1896 Alex found only 12 cases in the literature of pyloric and duodenal stenosis due to bile-tract disease. In 1897 Tuffier and Marchaise collected 19 cases In 1899 Petersen reported from the Heidelberg clinic 55 cases of benign duodenal and pyloric stenosis, of which 8 were due to gall-bladder disease. In this series cholelithiasis, next to ulcer, was the most common cause of stenosis. Since attention has been directed to the condition, a great many other cases have been reported. During the last year I have had 3 cases under observation, so that pyloric and duodenal obstruction from cholecystitis is common enough to be taken into account seriously when evidence of pyloric stenosis exists.

The obstruction may arise in various ways. An acute pericholecystic exudate may surround the duodenum and pylorus, making compression. Simple extension of inflammation to the muscular coats of these structures may paralyze their contracting power, and give rise to clinical dilatation of the stomach. A mass of pericholecystic adhesions may contract and obliterate the lumen of the pylorus or duodenum. Adhesions may cause kinking and obstruction. A gall bladder distended with stones or exudate may compress the duodenum. A large stone in the cystic or common duct may have the same effect. Perforation of a stone into the duodenum may result in cicatricial stenosis.

Relative to the clinical picture produced, when the obstruction is due to an acute inflammatory exudate, symptoms of acute clinical dilatation of the stomach arise, usually following the onset of cholecystitis by a few days or two or three weeks Tenderness in the pyloric region, and perhaps temperature, may be present.

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Peristaltic waves are likely to be absent, because of the insufficient time for the development of pronounced hypertrophy of the gastric muscle.

When the obstruction is due to an old process, such as cicatricial bands, etc., a history of an attack of cholecystitis several months or even years before is usually obtained. Peristaltic waves are pronounced, and other symptoms of a chronic clinical dilatation of the stomach are present. Cramp-like pains and vomiting may take place at the time the stomach is emptying, and thus the symptoms of gastric ulcer may be simulated. A palpable tumor is sometimes present, which is frequently mistaken for carcinoma. In all cases of pyloric obstruction, with or without tumor, the possibility of an original cholecystitis should be considered.

Relative to palpable pyloric tumors, experience leaves no doubt in my mind that even among those better qualified to diagnose conditions, lives are constantly sacrificed by assuming on insufficient evidence that a palpable tumor at or near the pylorus is malignant.

Stenosis of the intestinal tract below the duodenum due to cholelithiasis is relatively rare. In 1903 Ranke could find only 10 cases of stenosis of the colon, 4 in the transverse colon and 6 at the hepatic flexure. In only 4 of these had the diagnosis of cholelithiasis been made. The caliber of the colon and the long mesentery of the transverse colon apparently protects it from stenosis The hepatic flexure is more frequently stenosed, probably because it is more fixed and in closer proximity to the gall bladder. Obstruction in the ileum from the extension of inflammation attending gall-bladder disease is exceedingly rare. Ranke could find but one case reported.

The subject of biliary fistulæ communicating with the stomach and intestine may be disposed of in a few words. As to frequency, the statistics of Snively of recent date, taken largely from Courvoisier, gives:

Fistulæ between the gall bladder and stomach	8
Fistulæ between the bile ducts and stomach	12
Fistulæ between the bile ducts and duodenum	108
Fistulæ between the gall bladder and duodenum	93
Fistulæ between the gall bladder and jejunum	1
Fistulæ between the gall bladder and ileum	1
Fistulæ between the bile ducts and colon	50
Fistulæ between the gall bladder and colon	49
Fistulæ between the common duct and colon	1
Total	323

There are no characteristic symptoms of biliary fistula communicating with the gastrointestinal tract.

According to Mayo Robson, "Many of the biliary fistulæ are mere pathologic curiosities, quite undiagnosable, and only capable of being discovered postmortem. Many must form and heal, leaving the patient cured, and thus are they not only not discovered, but probably not even suspected. Fistulæ between the bile passages and hollow viscera, in the majority of cases, heal spontaneously, leaving only visceral adhesions, so that the fistulæ are comparatively rarely found postmortem."

Relative to the management of stenosis of the colon and fistulous communications, I shall say nothing. Old cicatricial bands at the duodenum or pylorus causing obstructive dilatation of the stomach may require gastroenterostomy in addition to treatment directed to the cholecystic disease.

I wish to refer especially to the management of duodenal and pyloric obstruction arising during or immediately following an attack of cholecystitis. The inclination to do an immediate gastroenterostomy to relieve the obstruction will usually be great. I believe I am stating it fairly when I say it is generally conceded among surgeons that if the condition of the patient will permit, it is good surgery to advise gastroenterostomy or some plastic operation on the pylorus as soon as the diagnosis of a high-grade pyloric obstruction from any cause is made.

Within the last year I have successfully managed two typical cases of high-grade pyloric obstruction due to cholecystitis by absolute rest and rectal feeding for four or five days, followed by gradually increasing quantity of milk and cream by mouth, testing the motor power of the stomach each morning by aspirating its contents. In these cases vomiting had been copious and persistent. Food taken on previous days had been vomited. Sarcinæ were abundant. Great thirst and reduction in quantity of urine, loss in weight and other signs of high-grade obstruction at the pylorus were present. In both cases, when first seen, the temperature had practically subsided, the local tenderness was diminishing, a moderate leucocytosis was present. The local condition did not demand immediate operative interference, and hence it was thought best to defer operation. The obstruction disappeared entirely after rest and rectal feeding, and both cases were thereby spared a gastroenterostomy that on first sight seemed strongly indicated.

If, in a given case, the local inflammation has reached its height, absolute rest to body, pylorus and duodenum favor rapid absorption of the plastic exudate. After it is demonstrated that food can pass the pylorus and duodenum, operation to remove stones, drain the gall bladder and relieve the local disease should be performed. On the other hand, if symptoms, such as high temperature, increasing pain and local tenderness, high leucocyte count, etc., indicate that the local inflammatory condition should be relieved without delay, operation directed to that alone should be performed. Very rarely, indeed, should a gastroenterostomy be done at the same time, unless there is evidence that the obstruction is due to old cicatricial tissue. Absorption of the plastic exudate causing obstruction takes place rapidly when the local cause is removed.

To recapitulate: In duodenal and pyloric obstruction due to recent cholecystitis, the advice is not to operate until the patency of the pylorus is tested by rest and rectal feeding, except in those cases in which immediate operation is necessary, on account of the seriousness of the local inflammation. In such cases operation should be directed to the relief of the local inflammation alone. Gastroenterostomy should rarely be performed at the same time, except when there is evidence of old pyloric or duodenal obstruction. If it is demonstrated that the obstruction does not grow less under the influence of rest and rectal feeding, then operation for the cholecystitis may be combined with gastroenterostomy if the condition of the patient will permit.

GALLSTONE ILEUS.

After a gallstone has reached the gastrointestinal tract, it usually passes with the feces without further trouble. Now and then a stone occludes the lumen of the bowel, and statistics show about 50 per cent. of such cases die as the result. In 1891 Schüler was able to collect 150 cases of gallstone ileus. Since then the number has greatly multiplied. A study of the literature shows that gallstone ileus is not in all cases due to simple occlusion. The size of the stone alone is not responsible. While it is true that large stones more

readily cause obstruction, deadly ileus may arise from small stones. On the other hand, Holzl has reported a case in which a stone, 13 by 9 centimeters, was passed to the anal sphincter before causing trouble. Gallstones have occluded the bowel at practically all points between the pylorus and the rectum. The most common seat of obstruction, however, is at or near the ileocecal valve, where the lumen of the intestine is smallest. Obstruction from stone is rare in the duodenum and jejunum, and relatively rare in the colon. The following causative factors enter into gallstone ileus:

1. Large stones may actually occlude.

2. Stones of moderate size may cause irritation and reflex contraction of the bowel about the stone.

3. A paralytic condition of the bowel may be the final result of continued irritation from the stone.

4. A stone may cause ulceration of the bowel, and the resulting peritonitis, with or without perforation, may result in occlusion.

5. Pathologic narrowing of the bowel may lead to obstruction by stone.

It is noteworthy that at the time of operation and at postmortem, gallstones causing intestinal obstruction are frequently found quite movable. The diagnosis of ileus due to gallstones can rarely be more than a probable diagnosis. A majority of the large stones causing occlusion have reached the intestine, usually the duodenum, by ulcerating through the gall bladder or cystic duct. Relatively rarely do large stones pass the common duct. Hence icterus does not commonly precede the occlusion. Peritoneal adhesions frequently unite the gall bladder to the intestinal tract, and by a slow process of ulceration a large stone may gain access to the bowel without causing serious symptoms. Thus, in many cases, history pointing to previous cholecystitis may be entirely absent. In most cases occlusion takes place after the stone has been in the bowel for a long time.

Owing to the many factors entering into the occlusion, the symptoms are exceedingly variable. Contraction of the bowel about a small stone may cease for a time and then recur, giving an interval of freedom from symptoms. Obstruction from gallstones seldom occurs until after the sixtieth year. As a rule, the obstruction is in the small intestine. In general, there is nothing absolutely characteristic about the symptoms of gallstone ileus. However, in addition to what has been said, the following special features may be borne in mind: In no other form of obstruction is fecal vomiting so likely to occur at the same time that abundant gas and feces are passed by the bowel. Obstruction being high, early and profuse vomiting takes place, yet often with relatively less shock and prostration than in other forms. As a rule, the pain is not so severe, the pulse not so rapid, the meteorism is not so great, the general symptoms are less severe than in obstruction due to strangulation of the gut, volvulus, and other conditions associated with grave circulatory disturbances in the bowel.

The treatment should be operative, after a reasonable effort has been made to overcome the occlusion by medicinal and physical means.

An extended study of the relation of typhoid fever to cholecystitis and cholelithiasis will not be attempted here. The work of Richardson, Cushing, Gilbert, Fournier and others has abundantly demonstrated the causal relation between typhoid fever and cholelithiasis.

DIAGNOSIS.

I have already alluded to the difficulty in differentiating gall-bladder disease and its results from primary disease of the stomach and intestine. The difficulties in diagnosis at times are insurmountable. Time will permit me to consider only the differential diagnosis between ulcer of the stomach and duodenum and cholelithiasis. I shall dwell on certain points only. It is of great value in diagnosis to simply remember that there is not a single symptom in gastric or duodenal ulcer that may not be present in cholelithiasis, and *vice versa*. Thus temperature may be present in ulcer as a result of perigastritis. A tumor from secondary glandular enlargement and perigastritis may develop in ulcer. Icterus, as a result of duodenal ulcer, is easily explained. It may develop from adhesions and inflammatory swellings complicating gastric ulcer. After all, icterus is relatively rare in gallstones. Riedel says that if one were to diagnose gallstones only when icterus is present, the diagnosis would be made in no more than 10 per cent. of the cases. Even the symptom, hemorrhage, so valuable in the diagnosis of ulcer, is not altogether reliable. It is present in less than half of the cases of ulcer, and vomiting of blood occurs in less than one-fourth of the cases that are diagnosed. Vomiting of blood may take place in gallstones, first, from excessive vomiting alone; second, gallstones may perforate the duodenum or stomach and cause hemorrhage; third, thrombosis of the venous radicles of the portal vein attending the spread of inflammation about gallstones may give rise to hematemesis or melena.

Hyperchlorhydria is an important symptom in ulcer. It is by no means constant. Gallstones may give rise to a reflex hyperchlorhydria. When pyloric obstruction develops as a result of cholelithiasis, the retention of the ingesta induces hyperchlorhydria and even continued secretion may arise, as in one case recently under observation.

In gastric ulcer the complexus of symptoms characterized by discomfort coming on from one to two hours after eating caused by the hydrochloric acid irritating the ulcer, pain gradually increasing until about three hours after eating may become severe, cramp-like, and finally result in vomiting with relief, is well-nigh diagnostic of the condition. It is well to remember that these symptoms, almost characteristic of ulcer, may be found in cholecystitis that has resulted in adhesions about the duodenum and pylorus. The pain is produced from two to four hours after eating, when the food is being forced through the narrow pylorus and duodenum. Tenderness on pressure in the pyloric region may be present in both. The ordinary symptoms of so-called dyspepsia, feeling of weight, fullness after eating, associated with eructation of gas, may be identical in ulcer and cholelithiasis. The examination of a test-meal is important, because, other things being equal, normal secretion and normal motor power speak against a stomach disorder.

As disheartening as the attempt at differential diagnosis may appear from an analysis of the individual symptoms of the two conditions, in typical cases there is no difficulty whatever in differentiating gall-bladder disease from gastric ulcer. One may say that in the majority of cases a fairly accurate differential diagnosis can be made between the two conditions if the whole clinical picture is carefully studied. Mistakes are likely to occur when evidence is faulty or incompletely elicited, or when too much stress is laid on some individual symptom.

DIAGNOSIS OF CHOLECYSTITIS AND CHOLELITHIASIS.*

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According to generally accepted statistics, one adult in every ten is the subject of gallstone. Of these about 5 per cent. suffer from symptoms of the disease. A proportion of these cases show such marked symptoms that the diagnosis is easily made, and the condition is readily recognized. A larger proportion of cases, however, present such vague symptoms, or symptoms so little understood by the general practitioner, that diagnosis is not made, and many patients who are much in need of relief which surgery might give, continue as chronic invalids for years until some severe crisis brings them to an untimely end. Owing to the efforts of many able scientists, prominent among whom are Mayo Robson, Kehr, Brewer, the Mayos, Murphy and Richardson, much has been done toward throwing the searchlight of knowledge into that region which has been called the mysterious realm of surgical romance, namely, the right upper quadrant of the abdomen. And to-day we are quite safe in eliminating from our list such conditions as gastralgia, gastric colic, neuralgia of the gall bladder, neuralgia of the stomach, etc., and we have learned that every case of chronic indigestion which can not be relieved by the internist should be handed over to the surgeon, for by his skill a solution of the difficulty may be found. To-day diseases of the gall bladder and gall ducts do not belong to the domain of internal medicine, but to the domain of surgery, just as much as is true of appendicitis. To-day the internist must recognize the fact that the diagnosis of gall passage disease does not depend entirely on jaundice. He must know that certain forms of this disease may only be recognized by a careful study of the patient's history and by a most discriminating investigation of the symptoms which he presents.

The important diseases of the gall passages are embraced under the following heads:

1. Inflammatory disease of the gall bladder and gall ducts with or without stone.

2. Gallstones in the gall bladder and gall ducts with or without inflammation.

3. Inflammatory condition of the region surrounding the gall passages causing obstruction by pressure or distortion.

4. Neoplasm of the gall passages, benign and malignant, with or without gallstones, and with or without inflammatory disease.

SYMPTOMS.

The prominent symptoms produced by gall-passage disease are: Pain, tenderness, fever and chills, vomiting, change of pulse rate, collapse, tumor, jaundice, urinary changes, blood changes, changes in the stools.

Pain.—In this disease the pain is to be distinguished by its character, which is usually colicky, more often occurring when the stomach is empty, hence the attacks usually come on at night. It is situated in the region of the gall bladder, extending toward the right shoulder and the back. It is frequently relieved by eating, and is generally relieved by the escape of gas from the bowel. Pain is claimed by Kehr and many authorities to be almost entirely dependent on inflammatory changes, though Murphy, Ferguson and many others claim that it is due to the effects of stone or to distention of the gall bladder or ducts independent of infection. The characteristic features of the pain are its acute onset, its colicky nature, and, as described by Lambert, the patient experiences a sense of something boring through the abdomen to the vertebra.

Tenderness.—As in appendicitis, tenderness localized to the region involved is, perhaps, one of the most characteristic symptoms. In the main its maximum point of intensity is just below the free border of the ribs, opposite the juncture of the ninth rib with its costal cartilage. The Mayo Robson point, comparable to the McBurney point in appendicitis, is above and to the right of the umbilicus at the junction of the upper two-thirds, with the lower third of a line drawn from the ninth rib to the umbilicus. This is the point of maximum tenderness in the majority of cases. Mayo Robson says that this is true, even in cases where the liver and gall bladder are considerably displaced, as it is really the site of reflected pain passing along the splanchnic to the eighth and ninth dorsal nerves, and thence reflected to the surface of the termination of these nerves.

Fever and Chills.—With a characteristic attack of gallstone colic the fever is of the acute type. There is very frequently with the pain a sudden and severe rigor, the temperature rising rapidly, and as rapidly subsiding with the subsidence of the pain. As pointed out by Murphy, the temperature chart in this disease is characterized by a series of angles instead of curves. In cases of infection of the gall bladder going on to suppuration, of course the fever may continue as a septic fever, having the characteristic phases.

In cases of acute inflammation of the gall bladder in which gangrene results, the onset and progress of the disease may be very sudden and rapid, but, as in analogous cases of appendicitis, a period is reached, when gangrene first takes place and before general sepsis has occurred, in which there may be an almost complete subsidence of symptoms. It should be very alarming if the condition is recognized, for the pain ceases, the tenderness decreases, the nervous phenomena are reduced to the minimum so that the temperature and pulse may recede toward the normal, and one may be led into the mistake of believing that the disease has subsided. Of course, when perforation has taken place or when peritoneal sepsis begins, all the characteristic symptoms will be again exaggerated.

Vomiting.—Vomiting is a very frequent symptom in acute attacks, coming on suddenly with the pain. It is of reflex character, and is independent of nausea. In some cases a severe paroxysm of vomiting may result in dislodgement of the stone from the common duct, it either passing into the intestine or by relaxation receding into the dilated portion of the common duct, when a temporary subsidence of the attack will take place.

Pulse.—During an acute attack of biliary colic the pulse is accelerated and its tension is increased. During inflammatory disease of the ducts or gall bladder, of course, the pulse will be in keeping with the febrile disturbance.

Collapse.—Collapse is a frequent occurrence in severe attacks of gallstone colic. It may be so severe as to mask all other symptoms and to render diagnosis obscure. According to Mayo Robson, the acute agonizing pain may of itself cause death. Of course, collapse will be a marked and final symptom of phleg-

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monous cholecystitis, perforation of the gall passages, or of any condition resulting in fatal peritoneal sepsis.

Tumor.—In cases of inflammation of the gall bladder or of obstruction to the common duct or cystic duct, the distended gall bladder may be felt. Projecting below the free border of the ribs it may be of almost any size, sometimes reaching far below the umbilicus. It is usually a pyriform, fluctuant mass, which is continuous with the free border of the liver, and which moves with the liver on respiration. It may be exquisitely tender or not. On several occasions I have been able to palpate a gall bladder distended with gallstones; in some cases the crepitation of the stones rubbing on each other could be distinctly made out. In one case there was a single stone measuring 7½ inches in circumference, the patient's abdominal wall was thin, and the hard mass could be very distinctly felt.

Jaundice.—Jaundice may be either present or absent; it may be persistent or it may be intermittent; it may be pronounced or slight, depending on the amount of obstruction to the flow of bile into the intestine. Thus, with obstruction of the cystic duct, we may have no jaundice; with obstruction of the hepatic duct we may have partial jaundice; with obstruction of the common duct we may have pronounced jaundice. A stone impacted in the common duct may leave a valve-like opening which permits of the escape of bile into the intestines. Then jaundice will not be present or will be but partial. When a distended common duct has become sufficiently open to allow the stone to float from its position of impaction, the jaundice may be relieved by the flow of bile into the intestine, the stone becoming again impacted; then the jaundice will be intermittent. Jaundice may be caused by inflammatory swelling in the common and hepatic duct, or it may be caused by inflammatory constriction or torsion of the common duct, or it may be caused by malignant disease of the duct or of tissues in the neighborhood of the duct.

To sum up, jaundice may be caused by stone in the hepatic duct; in the common duct; by inflammation of the hepatic duct or common duct; by carcinoma of the gall bladder (late); by tumors of the hepatic duct; the common duct or the neighboring viscera; and by localized peritonitis constricting or distorting the common or hepatic duct by adhesions.

Prolonged persistent jaundice with progressive loss of weight is very indicative and suspicious of carcinoma in this region.

A careful consideration of the above will show that jaundice is by no means a constant symptom of gall-passage disease. According to Brewer, it is absent in from 80 to 90 per cent. of all operative cases, and the clinician should never hesitate to make a diagnosis of disease of the bile passages because of the absence of jaundice.

Urinary Changes.—Examination of the urine is principally of interest in determining the presence and degree of jaundice.

Blood Changes.—Examination of the blood will aid in determining the presence and degree of jaundice, and the amount of leucocytosis will also aid in determining the presence of suppuration.

Stools.—By examination of the stools one may determine the presence or absence of bile, the stools being light in color to clay color, depending on the amount of jaundice, and the consequent absence of bile from the intestines. One may also determine the presence of gallstones after a characteristic attack during which gallstones have passed from the ducts.

X-RAY EXAMINATION.

So far diagnosis of gallstones by the *x*-ray has been rather unsatisfactory. Very thorough and painstaking work has been done in this field, and skiagraphs of gallstones have been made. Of course, when a positive finding is obtained, it is of the greatest use, but, on the other hand, the many failures and the uncertainty of the process leave us in the position that a negative finding does not necessarily mean that gallstones are not present.

DIFFERENTIAL DIAGNOSIS.

Bile-passage disease is to be distinguished particularly from the following conditions: Gastric ulcer, appendicitis, renal colic, pancreatitis, phlebitis portalis, angina pectoris, empyema, subphrenic abscess, malignant disease of the pylorus, duodenum, pancreas, liver, kidney, etc.

Gastric Ulcer.—An acute attack of indigestion dependent on a gastric ulcer may simulate biliary colic. In gastric ulcer the pain is of a different character, less severe and not so paroxysmal; tenderness, when present, is higher and nearer the median line; the vomiting is preceded by nausea; chill and fever are usually absent; the attack comes on after eating while the stomach is full, while in biliary colic the attack usually comes on at night, and is rather dependent on an empty stomach.

Diagnosis is to be made by the above facts and by a hematemesis, the examination of the stomach contents, the absence of jaundice, the absence of tenderness at the Mayo Robson point, and a careful consideration of the preceding history.

Appendicitis.—In typical attacks no difficulty should be found; but in certain cases where the appendix is displaced upward and the disease is toward its tip, or where former adhesions have possibly connected it with the upper quadrant of the abdomen, difficulty in diagnosis may be experienced. The characteristic signs of appendicitis are the extreme rigidity of the right rectus muscle, the nature of the onset of the attack, the difference in character of the temperature, the difference in character of the pain, of its site and of its direction of radiation; the vomiting is often reflex, and preceded by nausea and indigestion; there is absence of jaundice. In severe cases where the signs are very confusing, Hotchkiss has pointed out the fact that for the same period of the disease—say the end of twenty-four or forty-eight hours—a patient with gall-passage disease will be in much better condition than will be a patient suffering from a comparable attack of appendicitis.

Renal Colic.—In renal colic the onset of the attack, the paroxysmal nature of the pain, and the rigor may lead to confusion, but there is absence of the tenderness at the Mayo Robson point, of jaundice, of palpable tumor at the site of the gall bladder, and the pain radiates in entirely different directions.

Angina Pectoris.—Biliary colic may be mistaken for angina pectoris in certain irregular cases, because the pain may be precordial. It is to be distinguished by the presence of its characteristic signs and by the absence of the signs which will be found on auscultation of the heart.

Pancreatitis.—Acute pancreatitis may be differentiated from acute cholecystitis and from phlegmonous cholecystitis with great difficulty. Aside from the history of the attack and the patient's previous history,

the only distinguishing point may be the presence of fat in the stools.

Phlebitis Portalis.—I have seen two cases of phlebitis portalis as a remote sequel of appendicitis. They were both fatal. They showed the characteristic temperature of septicemia, and there was tenderness in the region of the liver and a mild form of jaundice. These cases were to be distinguished from bile-passage disease by their precedent history, by the characteristic temperature range, and by the lack of the prominent characteristic symptoms of disease of the gall passages.

Empyema and Subphrenic Abscess.—Certain cases of encysted empyema and cases of subphrenic abscess on the right side, owing to their situation, may be confused with disease of the biliary passages. They are to be distinguished by the lack of symptoms of biliary colic, by their preceding history, and by the physical signs which may be found on careful examination by percussion, palpation and auscultation. Of course, occasionally diagnosis in these conditions can only be arrived at by an exploratory incision.

Just here let us say that in any case where there exist symptoms indicative of grave disease which the internist can not cure by hygiene or drugs, and where the symptoms are sufficiently vague or masked to make an accurate diagnosis impossible, we should turn without hesitation to the employment of exploratory incision, for these symptoms must mean some disease intractable to any except operative treatment, and by properly applied surgery many lives may be saved which otherwise would be lost during a period of prolonged doubt and hesitation.

Malignant Disease of the Pylorus, Duodenum, Pancreas, Liver, etc.—In my experience a certain proportion of cases of cancer of one of the organs in this region can not be definitely differentially diagnosticated except by exploratory incision. Of course, much light may be thrown on the subject by an examination of the stomach contents, by a careful consideration of the entire history of the case, taking into account the presence or absence of important characteristic symptoms.

SPECIAL DIAGNOSIS.

In this brief paper I have only attempted to elucidate certain points which may enable one to make a diagnosis of disease of the gall passages, and space will not permit me to go elaborately into the finer questions which would aid one in making an accurate diagnosis and estimate of the special conditions present, but for this purpose the physician is referred to Brewer's[1] diagnosis chart of diseases of the gall bladder and ducts, for I feel it to be the most concise and accurate epitome of this subject in literature.

To-day surgery of the bile passages is on a very sound footing, and thousands of lives are being saved by the work of skilled operators; but many more thousands of lives are being sacrificed on account of the difficulty of diagnosis, and of the fact that a large proportion of cases urgently needing surgical relief are unrecognized or continue to be treated or neglected as cases of gastralgia, of indigestion, of neuralgia of the stomach, neuralgia of the gall bladder, etc., and if the foregoing remarks may in any way aid in the recognition of these diseases, I shall feel well repaid for my humble efforts.

1. Boston Medical and Surgical Journal, vol. cxlviii, p. 532, May 14, 1903.

THE TREATMENT OF CHOLECYSTITIS AND CHOLELITHIASIS.*

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That the Chairman of the Section on Practice of Medicine has called on two of his surgical colleagues to prepare papers on the diagnosis and the treatment of gallstone disease which, but a very few years ago, was considered entirely within the domain of internal medicine, is suggestive of the change which has taken place in medical thought and practice and of the better understanding which has risen between the internists and the surgeon. The growing tendency to place these diseases of the gall bladder and bile ducts within the category of surgical affections is due largely, perhaps, to the very effective work of surgeons in extending the knowledge of the pathology of these diseases, by recording the conditions directly observed on the living, and by comparing these with the symptoms manifested in each case. In this way not only has the pathology to an extent been rewritten, but also the diagnosis has been established on a firmer basis.

The foundation of rational treatment has in this way been definitely established, and we are prepared now to go ahead and endeavor by continued observation to render the diagnosis more certain, for on these two points—definite pathology and exact diagnosis—all progress in treatment must rest.

The treatment of cholelithiasis and its complicating cholecystitis forms a most important chapter in the consideration of this subject. Obviously, the whole question is too broad a one to be considered at length within the limits of this brief paper, and attention will be chiefly directed to the modern interpretation of the various forms of treatment as based on physiologic and pathologic research, and conditions observed under the scalpel of the surgeon.

Treatment in cholelithiasis may be divided into two classes: First, the medical or palliative; second, the surgical or radical and curative. While our knowledge of the diagnosis of surgical conditions of the gall bladder is receiving constant additions, it is still too inexact in many cases, and many of our operative attacks are still largely exploratory. Bearing this in mind, we must admit that our medical brother may still often be justified in applying palliative measures and waiting for developments in many of his cases. Although the treatment of gall-bladder infection is undoubtedly surgical, there are so many factors to be considered in various cases that the radical or curative treatment is by no means unfortunately always available or even allowable. Hubert Richardson,[1] in an admirable paper, "Physiology and Pathology of Biliary Secretion," makes a plea for medical treatment in gallstone disease, which is based on some very interesting physiologic experiments on the action of the bile salts. As it has been shown by Herter that the bile salts act to hold the cholesterin in solution in the bile, their administration ought logically to prevent its precipitation and consequently gallstone formation. Since inflammation of the gall bladder invariably increases the amount of cholesterin and diminishes the amount of bile salts in all cases of cholecystitis, the administration of sodium glycocholate should theoretically be indicated. The

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

1. N. Y. Med. Jour., April 9, 1904.

possibility of the solution of gallstones *in situ* is of the greatest clinical importance, and the search for such a solvent is as eager as that for the philosopher's stone, but thus far, unfortunately, quite as elusive. Recently Wakelin Barret[2] experimented by inserting large gallstones aseptically into the healthy gall bladder of dogs, and found that in from six months to one year they were dissolved, proving that healthy bile had the power to dissolve gallstones. He found, however, if stones were similarly inserted and an infective cholecystitis produced, they were not dissolved, showing that the bile under such conditions had no solvent power.

Austin[3] has shown by analysis of the bile obtained from operative fistulas that the cholalic acid is from 1/3 to 1/8 of the cholesterin, while, according to Hammerstein, the normal ratio is as 12 to 1. It is evident, then, Richardson thinks, by administering sodium glycocholate, that it may be possible not only to prevent the formation of gallstones, but also to dissolve those already formed.

Heppel found that 5 per cent. olein, 10 per cent. bile salts, and 50 per cent. soap, will hold in solution their own weight of cholesterin; hence by administering alkalies and bile salts with a diet rich in fat the solution of gallstones ought to take place and their formation be prevented. This treatment proposed by Richardson comes, as he says, under the head of organotherapy, in that it is an administration of a secretion of the liver which is reabsorbed from the intestine, and so acts on the bile secretion through the blood.

The treatment by olive oil, adopted so enthusiastically by the profession a few years ago, has not fulfilled the hopes of its advocates as a specific, and is believed to have no direct action, but by relieving congestion of the intestine to aid indirectly in draining the biliary ducts. As there is no doubt that catarrh of the mucosa lining the biliary passages tends to increase the amount of cholesterin, and the longer the bile remains in the gall bladder the more cholesterin it will contain, it follows that whatever leads to the regular emptying of the gall bladder and the ducts tends to clear out any detritus, cholesterin crystals, mucus, etc.

Hence the rationale of the treatment which aims to clean out the intestinal tract, relieve congestion and increase the flow of bile is perfectly sound. The system of treatment adopted at some of the famous "Cures" abroad, notably Carlsbad, combining diet, exercise and the free consumption of certain mineral waters, seems often to be followed by very marked benefit, especially in the milder cases of catarrhal cholecystitis and cholangitis. When a patient has suffered from one or more attacks of biliary colic a course at Carlsbad may be of lasting benefit or entirely without effect. In a patient who can afford it, and in whom the disease has not progressed to such an extent as to menace his safety, such a course may be perfectly well prescribed.

A recent monograph by Fink[4] of Carlsbad gives the results in a large series of cases observed by him, and an analysis of the results obtained by the water cure alone and the "cure" plus a surgical operation. As he very properly states, the great point to be determined is the borderline between balneologic and surgical treatment, i. e., when the former should cease and the latter be commenced. In his series of cases he presents abundant material, affording a glimpse at the results of the Carlsbad "cure," and out of this material he presents a string of references which stands in intimate relation to this question. A perusal of the whole article is to be recommended.

What cases, then, shall be treated expectantly and what surgically? As the indications for operative interference in cholecystitis are further extended and better understood, there will come a full agreement between surgeon and internist as to the limitations of medical and the indications for surgical treatment. In the meantime, until such an understanding is reached, and in order that the medical man and the surgeon may understand each other's point of view, it may be proper to discuss the general effectiveness of surgical treatment, its advantages and its dangers, and, so far as possible, some of the reasons why its results fall short of the ideal. Inasmuch as the necessity for radical treatment is now pretty plainly recognized by all progressive practitioners, the number of cases "treated by procrastination and the direct encouragement of the opium habit" is each year growing less. Still, too many cases are encouraged to drift along and only counseled to submit to operation when the general condition is bad and the local ones such as to render necessary some of the more elaborate, difficult and dangerous operations. It should be remembered that the surgeon must take the case generally as it is brought to him, and the practitioners ought not, in justice to the good work which has been done in gall-bladder surgery in this country and abroad, to frame his opinions and judgment merely on the results of operations in desperate cases.

The promise of the future in gallstone surgery lies not so much in further elaborations of technic as in the prompt diagnosis by the internist, and his co-operation with the surgeon in advising one of the simpler prophylactic operations which may be done before serious infection, adhesions, duct invasion and blood changes have made any undertaking more severe, more hazardous and less effectual. As greater certainty in diagnosis is reached, there will be less call for the more difficult and dangerous operations on the common duct and a decreasing number of cases requiring cholecystenterostomy. Wherein, then, lies the danger in operation? Principally in delay. The statistics from our hospitals and private sources show a mortality so low in cholecystostomy and primary cholecystectomy that the internist may feel entirely justified in offering a surgical operation as a prompt, efficient and safe measure in any proper case, and as the only radical and curative means of which we have any knowledge. The danger of delay has been pointed out by the readers of every paper, and should be well understood both by the patient and the physician. With the diagnosis of obscure biliary affections discovered by means of exploratory laparotomy, Lawson Tait's name will always be associated, and following his example, many surgeons have not hesitated to make the diagnostic cut which, though undoubtedly capable of great abuse, can not to-day be questioned as not only frequently justifiable, but also necessary in obscure diseases of the gall bladder and ducts.

When we consider that the first deliberately planned cholecystostomy was done by Marion Sims in 1878, and the first cholecystectomy by C. Langenbuch in 1882, it will be seen what great progress has been made in this department of work in the last twenty years. In 1892, Murphy published his account of the applica-

2. Jour. of Physiology, 1903.
3. Jour. of Med. Research, 1902.
4. Erfolge der Karlsbader Kur und der chirurgischen Behandlungs des gallensteinleidens, 1903.

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tion of his button for the purpose of affecting an anastomosis between the gall bladder and the intestine. A number of operations have been proposed for stones impacted in the cystic and common ducts. Tait's cystico-lithotripsy or crushing *in situ* in 1884. Lithectomy,[5] or extraction of stone in the cystic duct through an incision in another part of the biliary passages by Courvoisier in 1888. Cystotomy, or incision of the cystic duct, by Lindner in 1891. Cystectomy, or resection of a portion of the duct proposed by Zielewicz in 1887, and cystico-enterostomy by Roth in 1888. Operations on the common duct are numerous, though many are obsolete or often impracticable. Hansfield Jones, in 1878, proposed choledochic massage, which has not had much success, either having been followed by complete failure or by choledo-lithotripsy (Langenbuch, 1886, Sprengel, 1890, Mayo Robson, 1891). Choledochotomy, proposed by Langenbuch in 1884, was developed by Parkes in 1885, and is to-day one of the most important operations for stone in the common duct. Five years later Kocher gave it his support. The first typical operation of this sort was done by Knowsley Thornton in May, 1889, and at about the same time by Marcy, Ferguson and Fenger. It is now established on a sound basis. A few years ago before the Association, Mayo of Rochester proposed an important and ingenious device for drainage after this operation. The question of omitting sutures in choledochotomy was broached by Parkes in 1885, and they were left out by Hochenegg in 1890, and since that time the proposition has grown constantly in favor as the benefits and necessity of drainage in cholemic cases are better understood. Removal of impacted common duct stone by incision through the duodenum was first done in this country by McBurney in 1891, and retroduodenal choledochotomy was proposed by Berg of New York last year, 1903. Choledochostomy, choledochectomy and choledo-enterostomy are only possible in rare conditions.

Operations on the hepatic ducts are still in their infancy, owing to the infrequency of operative work in this region. Hepatico-lithotripsy was done by Kocher in 1890. Hepatico-colic massage was unsuccessfully used by Elliot in 1894. Hepatico-lithectomy was attempted by Courvoisier in 1890, by Abbe in 1891, and others. Hepaticotomy was done by Kocher in 1899, removing a stone by the transhepatic route. Finally, hepatico-enterostomy has been experimentally studied, but not done clinically. Looking over this list, it will be seen that American surgery has played no unimportant part in the pioneer work of the operative treatment of gallstone disease, and in the later developments of important modifications in technic.

With this brief reference to the great progress of surgery in cholelithiasis, we must pass on directly to the consideration of the treatment of cases as they present themselves to us. Although there is not as yet a full agreement as to the limitations of medical and the indications for surgical treatment, it can no longer be held that the surgeon is rash in advising operation in any case wherein any considerable degree of infective cholecystitis has been diagnosed. Although an infected gall bladder may be entirely restored to the normal, as Naunyn has shown, the proportion of cases of recurring severe attacks is large enough to give the surgeon full justification in urging earlier operation in many cases. Hence we must consider two classes of cases in cholelithiasis—one in which expectant treatment may still be advised, and another in which surgery is the only resort, recognizing, of course, that ultimately the only real treatment for all well-marked cases is surgical.

As has been shown, the period of "latency" may be reached at any period in the course of the case, provided the stone does not obstruct the passages or additional infection occur to disturb it by setting up inflammation, or traumatism to suddenly alter the position of the stone. The variability of this "quiet" period is very great, and is the chief factor relied on by those who favor palliative measures, since it may be very long and the attacks of colic comparatively mild.

What shall be our advice to patients suffering from cholecystitis and cholelithiasis? Shall we operate early or shall we wait? What is the present state of opinion and practice?

Cases seen in the first and mild attack, such cases, by the way, as are seldom seen by the surgeon, where the symptoms are slight and there is no peritonitis, where the inflammation in the gall bladder quickly subsides under medical treatment, are properly cases for observation.

In a certain proportion of these cases there is only one stone or small stones or mucus which are passed out into intestine and the cholecystitis disappears, about 10 per cent. (Elsberg[6]). In about 70 per cent., however, the stone remains in the cystic duct or drops back into the gall bladder, remains latent for a variable time, and the swollen gall bladder disappears.

Cases may be seen in subsequent mild attacks, where the patient may have had several mild seizures and has perhaps passed a stone or stones. Under these conditions at present, I think, most surgeons are inclined to wait, especially if the periods of "quiet" are long and the patient can be under proper medical surveillance. This is done in the hope that it may be the last attack and that the last stone has passed. These cases, however, are in some respects ideal ones for cholecystectomy, and the operation is here often very simple and the treatment perfectly rational, especially if the attacks are severe and frequent. The work of Lilienthal of New York in primary cholecystectomy, with practically no mortality, is certainly suggestive and worthy of our careful consideration.

In a personal communication he reports 47 cases with one death from pre-existing streptococcic infection. In cases with repeated severe attacks, when the patient is practically incapacitated for business and the general health begins to be affected, and resort to morphia gives rise to the fear of establishing the opium habit, nothing is to be gained by delay, and a golden opportunity is lost for radical cure if the cases are allowed to drift on. In these cases cholecystostomy is always justifiable, and the operation of choice, perhaps, by many surgeons, in that it is easy, safe and with modern technic not liable to be followed by fistula. These cases also offer a fair field for the primary cholecystectomy, which here, again, is often an easy operation, and in practiced hands a safe and certainly radical one. Park, Riedel, Winiwarter, Lilienthal and others are its strong advocates.

There is another set of cases which for a few days show evidence only of mild local infection, which suddenly change and develop signs of local peritonitis with heightened fever, rapid pulse and signs of general sep-

5. Fowler: Historical and Critical Observations on the Surgery of the Liver and Biliary Passages, Brooklyn Med. Jour., December, 1900.

6. N. Y. Med. Jour., March 26, 1904.

sis. These cases require early operation, lest perforation or rupture into the peritoneal cavity occur or abscess outside the gall bladder be formed with its attendant evils, primary and remote. In these cases the gall bladder and more or less of the cystic duct is involved, and the contents are either thick septic bile or mucopurulent fluid, or stones with thin purulent fluid, and there is local peritonitis with recent adhesions between gall bladder and neighboring organs. Here the treatment is prompt cholecystectomy with drainage of the cystic duct, or cholecystostomy. These cases frequently do very well.

In cases of common duct obstruction by calculus, where the obstruction is acute and recent, it is generally advisable to treat expectantly for a week or two, unless septic symptoms or peritonitis supervene, in order to determine if possible whether the obstruction may not be due to swelling, which will subside and allow the stone to pass. Or if the stone has passed, the signs will rapidly subside. In most cases the clinical picture of calculus obstruction is sufficiently distinctive for the diagnosis to be made from neoplasm. The indications for treatment are the removal of the stone by incision through the common duct, choledochotomy, or if it be too low or impacted in the ampulla of Vater, by transduodenal or retroduodenal choledochotomy. The practice of careful suture of the incision in the common duct has been pretty generally abandoned, unless the duct be drained through an opening in the gall bladder, as the necessity for drainage has been shown by Mayo Robson, Kehr, Mayo and many others. It is advisable practically in all these cases to drain the common and hepatic duct, as small stones otherwise may be overlooked or the patient die cholemic, which is of much more importance.

Cholelithotrity is no longer done and cholecystenterostomy is of far less frequent occurrence as the cases are sent earlier to the surgeon.

As is well known, the common duct cases are the most dangerous, because more often neglected or overlooked, or in a condition of exhaustion and cholemia when they come to the surgeon for operation.

It is surprising how well many of them react after operations and go on to complete recovery of health. Modern surgery has made even this possible and has many lives to its credit, but too much should not be expected of it; chronic jaundice often defeats the best planned operation or the most perfect technic, and the hemorrhagic oozing generally persists to a fatal termination in spite of any treatment thus far devised.

The senseless delay which makes this possible is one of the great causes which militate against ideal results in the surgery of gallstones, and this delay, while often due to the patient's fear of operation or to causes which would render any operation inadvisable, is still too often traceable to the lack of knowledge or confidence on the part of the family physician in the great resources of modern surgery.

CONCLUSION.

In conclusion, then, after this most careful review by the readers of the various papers on the pathology, the diagnosis and the complications of cholelithiasis, it will be seen that the treatment in these cases must ultimately be surgical, for when all has been said, it must be admitted that medical science has thus far discovered no sure solvent for gallstones *in situ*, nor devised any means, other than surgical, for the certain drainage of the gall bladder and the biliary ducts.

DISCUSSION

ON PAPERS OF DRS. BIERRING, OPIE, SIPPY, SYMS AND HOTCHKISS.

DR. J. M. ANDERS, Philadelphia—It is doubtless true that cholecystitis and cholelithiasis are of microbic origin and also that the particular micro-organisms are either the colon bacilli or streptococci. Dr. Bierring has emphasized a point of importance, namely, that the mere presence of these micro-organisms in the gall bladder and ducts is not sufficient to give rise to these conditions. In all cases, therefore, something has occurred before these conditions arise as a result of microbic infection. The predisposing factors should be more emphasized than they have been by recent writers, and these are, so far as my observations go, some forms of local irritation or congestion, including inspissation of the bile. The contributory factors are very numerous and many refer to the various products of abnormal metabolic processes. Nobody questions the relation of cholecystitis to cholelithiasis; these conditions most probably stand to one another in the relation of cause and effect. Of course, there are many cases of cholecystitis which subside without giving rise to cholelithiasis; but the conditions remain which favor the development of gallstones and subsequent infection of the gall bladder may lead to active biliary colic. Dr. Sippy's paper treated of the relation of the gall bladder and bile ducts to diseases of the stomach and intestines. I am not ready to admit, since it is contrary to my previous experience, that ulcer of the stomach and intestines arises secondary to disease of the biliary passages and gall bladder. But I have seen rather grave forms of gastrointestinal disturbances from this cause, and quite recently two cases of pyloric obstruction. I believe with Dr. Sippy that the motor functions are more decidedly disturbed than the secretory functions of the stomach. One of the most important points from a diagnostic standpoint is to obtain a clear history whenever possible; this will very often throw light on the case diagnostically. I mention this because it seems to me that scarcely sufficient emphasis has been laid on it in the paper. Dr. Sippy pointed out two very important practical lessons. One was that medical measures may suffice, together with rest and proper diet, to overcome pyloric obstruction due to disease of the gall bladder and ducts. The other fact was that surgical operation, when undertaken to overcome pyloric obstruction, should be in part directed to the relief of the causes of the gastric condition. To remove the pathologic conditions presented by the gall bladder, the adhesions and the like, must go far toward effecting a cure of this stenosis. With regard to the diagnosis of cholelithiasis, my observation is that, immediately preceding the attack of gallstone colic, pain is referred to the back, to the right of the tenth dorsal vertebra; this pain may last but a few minutes. So far as I have been able to observe, this is not present in cholecystitis of pure and simple form. This is followed, as a rule, by the rapid development of hepatic colic. I agree with Dr. Hotchkiss that it is highly important to make an exact diagnosis before instituting treatment. It is important to differentiate whenever possible between cholecystitis and cholelithiasis. Simple cholecystitis is still looked on by the majority of authorities as being largely a medical affection. On the other hand, cholelithiasis is a surgical disease. I do not mean to say that the diagnosis of cholelithiasis should always be followed by operation, but I do mean that the medical man should have the conservative surgeon's advice in such a case. Dr. Hotchkiss has emphasized the fact that the cause of failure was not so much due to bungling operations or operations poorly done as to the fact that operation is, as a rule, too long delayed; he is right.

DR. WILLIAM J. MAYO, Rochester, Minn.—I think it is well for us to consider that gallstones are essentially foreign bodies, and as foreign bodies a diagnosis can only be made when they are giving trouble, and, other things being equal, they should be removed. Gallstones may "slumber" for years, but when they awaken the probabilities are that they will not permanently regain an innocent quiet, but rather tend to bring about those complications which give rise to serious and often incurable disease. Of these, one has but to mention chronic liver changes from jaundice and duct obstruction, inflammation of the pan-

creas, fistula, abscess and perforation. That cancer possibility is also a legitimate risk was pointed out by Musser and Kelynack years ago. In looking up evidence, we must bear in mind the statistics from simple gallstone cases and keep these sharply separated from those cases in which complications have occurred. The oration which Dr. Dock presented the other evening was exactly to the point. When a medical man is called to see a patient he must say that the prognosis in cases of simple gallstone disease surgically treated is remarkably good and depends more on the condition of the patient than on the operation itself. So the remarks that I shall make are based on gallstone disease in patients who are otherwise in good condition. The mortality of simple gallstone operation, while the stones are still in the gall bladder and that viscus is not serious infected, does not exceed 3 per cent. This mortality is largely accidental, and is not above that of simple appendectomy in the interval in patients of the same age and general condition. In contrast, I wish to call attention to the statistics given by the greatest of German gallstone operators. He has taken a rather conservative position, which American surgeons are not inclined to follow. In his last 450 cases, taken as they come, there were 72 deaths, a mortality of 16 per cent. This high mortality was in the cases that had been carried too far. Therefore, I think the physician, in making a statement to these sufferers, should properly place the situation before the victim, because they have the right to a choice in the matter; in equity, it must not be entirely settled by the physician. The patient should be told that if in good health the removal of uncomplicated gallstones is accompanied by a mortality not above 3 per cent., but if the condition be left to run on and become complicated, then the mortality may jump to 16 per cent., as it did in the hands of the operator referred to. The complications cause the mortality. Few patients will deliberately elect the conservative course, if the facts are fairly laid before them, and the physician who fails to acquaint his patient with the whole truth does less than his duty and takes on himself a serious responsibility, for which he will ultimately be held accountable. After the removal of gallstones many secondary conditions of the gastrointestinal tract, and especially of the pancreas, may subside. Chronic inflammation and enlargement of the pancreas may be expected to disappear after drainage of the biliary passages. On a number of occasions I have found that a blocking of the duct of the pancreas by a common duct stone has led to an enlargement of the head of the pancreas, behind which the common duct stone became hidden; at a second operation, some months later, it was found that drainage had reduced the size of the head of the pancreas and revealed a stone which had been *in situ* during previous operations, giving rise to the trouble, but was undetected by duct palpation. In chronic pancreatitis with jaundice, the common duct should be opened and explored to the very papillæ for fear that a stone may be overlooked.

Dr. William S. Thayer, Baltimore—In the beginning of Dr. Opie's paper he refers to the recent work of Pavlov of St. Petersburg, showing that the admixture of bile and pancreatic juice increased the activity of the latter from three- to fourfold, and especially increased the activity of the fat-splitting ferment. It has been shown, both clinically and experimentally, that the entrance of bile into the pancreatic duct produced an acute pancreatitis in a large number of instances. Therefore, is it not probable that this action of the bile in increasing the activity of the fat-splitting ferment would cause an acute pancreatitis and the fat necrosis that goes with it?

With regard to Dr. Sippy's paper, these cases of gallstones impacted in the cystic duct are very interesting. I saw such a case, and it was a clear case; but the interesting feature was that some months before pain was complained of in the region of the gall bladder on taking food; she became much emaciated because of the pain, which was supposed to be due to adhesions of the pylorus. An operation revealed the cause. She had a very large dilatation of the stomach, due to adhesions at the pyloric end of the stomach and duodenum. This was not recognized until operation. The largest stomach dilatation I have ever seen was due to this cause. Another difficulty is sometimes encountered in attempting to distinguish between attacks of gastric ulcer and gallstone colic. I recently saw an interesting case. The patient was believed to be suffering from biliary colic. She never had any jaundice and had pain in the median line. She finally thought she would like to be operated on. She had not seen a physician for six months before coming to me. I found a large dilated stomach. The operation revealed two duodenal ulcers and a tight stricture of the duodenum. One of the greatest dangers encountered in these cases is through delay, especially in cases accompanied by jaundice. The development of hemorrhagic jaundice is an exceedingly grave thing.

Dr. J. C. Hemmeter, Baltimore—In June, 1903, I had an interesting experience with a case of cholelithiasis, which may serve as a type of three others of a similar nature seen by me. The wife of a physician was operated on for gallstones, and the surgeon resected the entire gall blauder. He took out twelve stones. The pains continued, and a second operation was deemed necessary. In the intrahepatic bile ducts were found three small gallstones, which had not been seen at the time of the first operation. I am by no means prepared to concede to the surgeon the entire control of all cases of gallstone diseases. When operation is necessary, the surgeon is indispensible. But we should remember that the diseases which lead up to gallstones are the most important thing for our consideration, also the abnormal conditions of metabolism that favor deposition of solid matter from bile. I think that the deductions of Dr. Bierring are very important, especially regarding those cases of infection of the gall bladder with germs, causing stagnation and catarrhal swelling, etc., but there is another very important class of cases of gallstone disease, the causes of which are to be sought in abnormal hepatic metabolism. We may have changes in the composition of the bile followed by precipitation of solid constituents in the intrahepatic and intercellular canaliculi. We need the surgeon, and we must have him, but I am not in a position to say to-day that the surgeon should have entire charge of these cases. Before the surgeon gets them, would it not be best for us to attempt to recognize the changes that lead up to cholelithiasis? In a rough but practical way we may speak: first, ascending causes of cholelithiasis; second, descending causes of cholelithiasis. The ascending extend upward from the duodenum. They include the upward progression of duodenal catarrh, stenosing the gall duct and producing catarrh of the gall bladder, also the infections of the ducts and bladder with the microorganisms of the intestine. The second group of causes may roughly be called descending, because they originate in the hepatic cells and lead to deposition of minute concretions in the intrahepatic bile canaliculi; these eventually may reach the lower and larger ducts and the gall bladder. It is these metabolic and intrahepatic concretions that cause the recurrence of the symptoms of gallstones, even after stones have been removed and gall bladder resected by the surgeon. The operation in these cases may, of course, be a life-saving step, but it can no more cure the metabolic cholelithiasis than cutting out a concretion of sodium biurate from a gouty knee joint can cure gout. While I admit the expediency of operation, I uphold the absolute necessity of preceding and succeeding medical treatment. It is these cases of recurring gallstone attacks after very radical operations that led Hans Kehr to send numerous cases to Carlsbad. There is no doubt in my mind that persistent and judicial drinking of alkaline waters (2 to 3 liters daily), together with the diet advocated at Carlsbad, may prevent the metabolic hepatic disturbances that lead to the second form of cholelithiasis mentioned above. The bile salts act in a similar manner. The alternating Scotch douche applied daily over the hepatic region is an available aid to this treatment. Many a case of cholelithiasis is a neglected or unrecognized case of chronic acid gastritis or duodenitis. In a number of cases proven to be cholelithiasis by operation I was able to watch the development of duodenitis from a gastric hyperchlorhydria or a chronic gastritis acida. Such cases have been studied for from ten to twelve years, when eventually cholelithiasis supervened, and it is plausible to assume that

the gastritis set up a duodenitis, and this in turn stenosed the common gall duct. Dr. Sippy has spoken of the relation of disease of the gall bladder and bile ducts to disorders of the stomach and intestines. We should study more the effect of diet and alkaline waters on the composition of the bile and the effect of gastric and duodenal diseases, leading to stenosis of the common duct. It has been asserted that there is great difficulty experienced in differentiating between the pain of gastric ulcer and gallstone attacks. I have in mind one or two practical points which I think are of value. In gastric ulcer we may find pepsin in the urine, and it is found there because the epithelium is denuded in the stomach, and the pepsin is absorbed as such and is excreted by the urine and will digest a certain amount of fibrin or boiled egg. There is another point of value in making a differential diagnosis. It has always been considered desirable to possess a substance which would relieve gastric pain if applied locally in patients afflicted with gastric ulcer. For this purpose I have administered orthoform. If orthoform is given in cholelithiasis the pain will not cease, but if given in a case of gastric ulcer it will cease promptly, especially if an alkali be combined with it.

DR. FRANK BILLINGS, Chicago.—On the subject of cholelithiasis I have positive views. These are based on my experience with patients suffering from the disease. We know that the chief source of cholesterin is an excretion or a secretion of the cells of the gall bladder. In all probability, little if any cholesterin is precipitated from the bile, consequently any treatment directed to lessen the precipitation of cholesterin is futile. I think our present knowledge does not admit of the use of the so-called solvents for gallstones. As we have no medication which will probably dissolve gallstones *in situ*, nor do we know of a drug which we can say will be excreted by the epithelium of the gall bladder, so our medical treatment is, I think, limited to the use of drugs which will diminish the infection of the gall tracts. This may probably be done by the so-called internal drainage by the use of cathartics like the salines, of which sprudel salts has the greatest reputation. So patients visit Carlsbad and other springs and are relieved of the infection which is associated with gallstones. The same relief may be afforded in many instances by a corresponding treatment carried on at home. In that event, with infection removed, the gallstones as foreign bodies may remain in the biliary tracts. As foreign bodies, we may not recognize the harm they may produce. We do not know that an intoxication may not be present with these latent symptoms and produce deleterious effects which are for the time unrecognized. We do not know, for instance, but that this condition of the gall tracts may have something to do in the production of arteriosclerosis, of which we have heard so much at this meeting. And, then, the patient who carries his gallstones even in this latent condition is subject at all times to more acute attacks, which may, like an acute appendicitis, place his life in danger and make the operation an emergency one. I, therefore, look on gallstones, when the diagnosis is surely made, as a surgical disease and look to the surgeon as the proper individual to treat the patient. In my estimation, an operation done at the proper time in uncomplicated cases is of less risk to the patient than the continued presence of the gallstones. Dr. Hemmeter has raised the question of preceding stomach or duodenal disease as etiologically related to gallstones. This is undoubtedly true, but we must not hesitate, in my opinion, to operate even if there be a recognized stomach or intestinal disease as a cause of the gallstones. I desire to emphasize that, if an operation is done for gallstones, it should be performed by the most skillful surgeon whose services may be obtained, and thus so lessen the risk to the patient that, in consenting to the operation, he takes a less risk than in keeping the gallstones.

DR. JAMES TYSON, Philadelphia—Two cases which occurred in my own practice illustrate the difficulty in diagnosis of some of the conditions which present themselves in the upper right quadrant of the abdomen. One patient, a man, had frequent recurring attacks of pain in the neighborhood of the gall bladder without jaundice, and the condition extended over a considerable period of time. The attacks were especially prone to come on very early in the morning, when the stomach was empty, and would often awake him from sleep. Examination otherwise was negative. It is true that a tumor was thought to be palpable by one or two physicians, but I could not realize this myself. The case came to operation, Dr. Edward Martin operating. The gall bladder was exposed, and it was entirely normal in size and contents, but in its vicinity were found adhesions between the pyloric end of the stomach and the adjacent bowel. I do not recall whether there were any adhesions between the pylorus and gall bladder itself or not. A rapid recovery followed the operation, and there was no recurrence of symptoms. What relation an original cholecystitis may have had to this condition I do not know. It was suggested there had been a gallstone which was the original source of irritation and cause of the symptoms, which had existed for years. The symptoms were relieved by the operation. Another case bearing on the diagnosis of these conditions was that of a woman who had had many attacks of biliary colic and had been treated at Carlsbad and at home. The physician in Germany said he could feel the bladder, and that there was no stone present. Dr. John B. Beaver operated and removed one hundred stones from the gall bladder, doing at the same time an operation for appendicitis. The patient is now perfectly well.

DR. ALLEN A. JONES, Buffalo—Symptoms which are presented to us are very often misleading and not sufficient to enable us, in many cases, to diagnose the number of stones nor the condition of the gall bladder itself. There are cases in which there are repeated attacks of biliary colic and in which the lives of the patients are rendered extremely uncomfortable, and here sometimes there is presented a single round stone, about the size of a pea, the stone being found floating in the gall bladder, containing a large amount of fluid, or impacted in the beginning of the cystic duct, or somewhere in the cystic duct. These cases are relieved by a cholecystotomy. There have been instances in which a single stone has been found impacted in the cystic duct, and yet no stones were found in the gall bladder. It has been my lot to find such a condition in a young girl. Symptoms of severe gallstone disease occurred at about the age of 14 years. In such cases there is brought up the question of a differential diagnosis between a floating kidney and a dilated gall bladder. While such a diagnosis may seem easy to the tyro, it is not a simple matter by any means. In such a case a surgeon of experience went in for a floating kidney, and, unable to find it, finally concluded, after considerable search, that he had to do with a dilated gall bladder, which was found and operated on. Occasionally we meet with cases in which there are impacted two or three large stones in the common duct, with the gall bladder empty. With regard to the symptomatology, we have found an intolerance of the stomach, which manifests itself after eating and not on an empty stomach. In fact, the patients constantly aver that the stomach is at fault because they can not eat anything. In a large number of cases I have found the stomach practically normal in secretion and in motion after the gall bladder was emptied. In such cases it has not occurred to us that the patient had gastric disease. There are other cases in which gastric disease is due to gall bladder disease, as, for instance, dilation, preceded by or accompanied by biliary disease.

DR. J. C. WILSON, Philadelphia—There are two classes of practitioners who hesitate to accept the fact that in the present state of knowledge gall bladder disease is a surgical rather than a medical affection. First, those who demand too many of the classical morbid phenomena for the diagnosis, and, second, those who accept periods of latency for cures. The modern literature, representing the experiences of the most advanced investigators, makes it clear that recurrent paroxysmal pain with interparoxysmal tenderness in the right hypochondrium points to cholecystitis, and that jaundice and recognizable gall bladder tumor are not at all necessary to the diagnosis. The every-day experience of the observant practitioner renders it equally clear that both in cholecystitis and cholelithiasis, especially in the latter, there are periods of latency simulating recoveries which are attributed by the unwary to treatment that may have been employed. It is true

that such periods may be prolonged, and in some instances constitute true recoveries. But such an event is exceptional and not to be foreseen in any given case.

Dr. Parker Syms, New York—In the chronic cases of gall bladder disease with stones, where the stones remain latent, the diagnosis is often impossible. But in the great minority, if not the majority, of the cases where the symptoms are present, the failure to make a diagnosis is absolutely due to failure to make a careful examination. Nothing more important can be set forth to-day than the importance of making a careful and exact diagnosis of the cases and of advising an early operation.

POISONING BY WOOD ALCOHOL.

CASES OF DEATH AND BLINDNESS FROM COLUMBIAN SPIRITS AND OTHER METHYLATED PREPARATIONS.

FRANK BULLER, M.D.
MONTREAL.
AND
CASEY A. WOOD, M.D.
CHICAGO.

(Continued from page 1062.)

Case 81.—(From Dr. John E. Weeks, New York City.)

E. V., aged 38, came to the New York Eye and Ear Infirmary, Dr. Weeks' service, Nov. 21, 1903. In the early part of August the patient suffered from intermittent fever, and on August 7 he drank a cupful of wood alcohol for the purpose of breaking up the fever. On the following day the vision of the left eye failed almost entirely, and the vision of the right eye became impaired. The maximum failure of vision was reached at the end of 48 hours. Since then, according to the patient's statement, there has been some improvement.

At the present time the vision of the right eye equals 30/40; the vision of the left eye equals fingers at eight feet. There is (see Fig. 1) concentric limitation of the field of vision, most marked in the left eye, an absolute central scotoma in the left eye and a relative central scotoma in the right eye.

The patient has been seen from time to time, and since November 21 the vision has remained approximately the same.

Case 82.—(From Dr. D. Emmett Welsh, Grand Rapids, Mich.)

J. D., aged 15, living in the country, was in the habit of visiting quite frequently a neighboring village, where he acquired the drink habit. It was his custom to become intoxicated on wood alcohol, in the company of farm laborers, and sleep off his fits of indulgence in the barn. When at home he procured and drank Jamaica ginger. One morning after such a spree he awoke to find himself completely blind. Dr. Welsh was consulted some time afterward and found him very shaky and nervous, speech difficult, general muscular tremor, marked anemia and complete loss of vision in all parts of the field. The fundi exhibited white atrophy of both nerves. In spite of treatment, vision was not improved, and he was finally sent to one of the state institutions for the blind.

Case 83.—(From Dr. D. Emmett Welsh, Grand Rapids, Mich.)

J. M., aged 14, acquired the drink habit and, "as it was so cheap," bought wood alcohol ostensibly for burning in a lamp, but really for use as a beverage. Previous to consulting Dr. Welsh he had never had any ocular defect. When seen he was totally blind in both eyes, but treatment improved his sight somewhat, until he now has about 3/200 in either eye. This boy exhibited the same degree of nervousness and anemia as the other boy, whose history is given elsewhere, and like him presented the fundus picture of optic atrophy.

Case 84.—(From Dr. Joseph White, Richmond, Va.)

A young man, S. N., was brought to Dr. White June 22, 1897. On May 1 he drank quite a quantity of Jamaica ginger; it is not known exactly how much. The next morning, May 2, he woke up vomiting. He walked home, six miles, over the mountains and arrived there exhausted, with cold feet and legs. He went to bed sick and continued nauseated for three days, during which time his sight gradually left him. When he came to Dr. White his vision was so bad that he could hardly make out the 20/200 type at four inches. His fields, taken with a light, seemed to be very much contracted. The fundus was normal, except some pallor about the outer third of the disc. The diagnosis was retro-ocular neuritis, with atrophy of the papillomacular bundle. He remained under treatment for ten days and went home. The only information received from him subsequently was that he made no improvement whatsoever.

Case 85.—(From Dr. Joseph White, Richmond, Va., and Dr. W. R. Williams, Richlands, Va.)

In March, 1898, Dr. White saw a young man, S. W., clerk, 21 years of age, who had been on a spree February 12, when he drank four bottles of essence of lemon, each bottle containing between two and three ounces. On Sunday morning at 10 o'clock he began to lose his vision. He also suffered great difficulty in breathing, the respirations reaching 40 to the minute, with no radial pulse, widely dilated pupils, general collapse and stupor. In spite of all treatment, he continued in a sort of stupor for two days. When he recovered from this mental condition he had no light perception. Five days later light perception began to return, and when Dr. White first examined him, three weeks afterward, his vision was 3/300. The pupils were widely dilated and not responsive to light, the retina was normal, the outer and central parts of the disc were bluish-white and slightly excavated. Dr. White made a diagnosis of optic atrophy from methyl alcohol. He heard from the physician who brought him, some time afterward, that the patient had made no improvement under treatment. In a report to Dr. White, dated May 8, 1904, Dr. Williams, who originally saw this case, says that the patient's vision improved for three or four months, so that he could resume his duties as clerk. However, he again took to drinking and smoking, his sight again deteriorated, fell to 3/20, and has so remained ever since.

Case 86.—(From Dr. Jay Philon Whitney of Vinton, Iowa, and Dr. Lee Wallace Dean, Iowa City, Iowa.)

W. H., aged 37, married, printer, of regular habits up to 1900. At that time he began to drink whisky heavily and continued for about a year, when, on being refused liquor at various places, he began to take Jamaica ginger. He was soon refused this at the drug stores, but was in the habit of handing boys small sums of money and inducing them to obtain it for him. In the early months of 1901 he began to notice failing eyesight and consulted various opticians and oculists for relief, but obtained none. He complained that if he stood so as to look down at his type case that he could see fairly well, but on raising the eyes he noted a very distinct blurring. About April, 1902, after taking on Sunday a considerable quantity of peruna and Jamaica ginger, on attempting to go to his work on Monday morning he became entirely blind and had to be led back home. "I saw him one hour later; the vision was totally lost, the pupils did not respond to light and shade, dyspnea was urgent, pulse rapid, feeble and irregular; cyanosis was present, the extremities cool. From this precarious condition he rapidly recovered his vision and usual health, and returned to work in about ten days. In June of the same year, after drinking freely of Jamaica ginger on Thursday evening, he awoke the next morning to find himself entirely blind. I saw him about one hour later; the same symptoms were present as in the first attack, but coma supervened about 1 p. m., and he died quietly about 5 p. m."

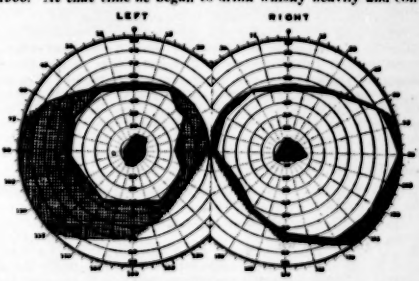

Figure 1.

Case 87.—(From Dr. Jay Philon Whitney, Vinton, Iowa, and Dr. Lee Wallace Dean, Iowa City, Iowa.)

C. F., aged 36, married, printer, of regular habits, except an occasional prolonged spree; no eye defect. About Jan. 15, 1903, began to drink whisky heavily and continued for two weeks, when he was unable to obtain any more liquor. He sobered up at that time and remained sober until Feb. 4, 1903. About 7 o'clock that evening he called on his former employer,

arranged to take up his work again and remained with him until 9 o'clock. At 11 o'clock, according to the testimony of his landlord, he returned to his hotel somewhat the worse for liquor and went to bed unassisted. On the following morning he awoke to find that he was totally blind. He managed to get into his clothing and reach the hotel office unassisted. His employer was telephoned for and saw him 30 minutes later. The patient told him that on the night previous, after leaving his office, he fell in with some kindred spirits and drank one dozen small bottles of essence of lemon. At that time he had an essence of lemon bottle with a small quantity in it on his person. He was then entirely blind, dyspneic and cyanotic; the extremities were cool. He felt a sense of impending dissolution and desired that his people be communicated with. An attempt was made to get him back to his room, but on the first landing he had a convulsive seizure and they were obliged to carry him the rest of the way. The dyspnea and cyanosis increased, the extremities became quite cold, and he died quietly at 11 a. m. Dr. C. C. Griffin, Jr., and Dr. A. R. Fellows also saw this man.

CASE 88.—(From Dr. James P. Widmeyer, Rolla, N. D.)

One of at least ten Indians of the Turtle Mountain Reservation, who went on a spree with lemon extract and Florida water, drank half a teacupful of the latter. He had intestinal pains, burning in his stomach and nausea. After walking a couple of miles from the scene of the spree he vomited freely and did not suffer as did his nine companions, who all died. Along with the blindness (exact details of which could not be obtained) he had a marked dysuria. One other survivor also complained of difficulty in passing his urine. The poison was drunk Aug. 31, 1904, and the amblyopia was noticed a few days afterward.

CASE 89.—(From Dr. Hiram Woods, Baltimore, Md.)

"The wife of a laboring man, to improve her digestion, has been in the habit, at intervals for several years, of taking three or four tablespoonfuls of Jamaica ginger daily. She is about 40 years of age and her husband now reports that her sight has recently failed and that attempts to obtain glasses to improve it have met with no success. He also said that she sees better to one side than straight ahead. So far he has not brought the patient to my office, as I urged him to do, and I can not speak more definitely, but the case certainly looks like one of methyl alcohol amblyopia."

CASE 90.—(From Dr. Emil Bories, Seattle, Wash. Reported by Dr. Hamilton Stillson, Seattle, Wash.)

On May 23, 1903, Dr. Bories was called to attend S. M., German, aged 32, painter by trade, who had drunk about three ounces of Columbian spirits (wood alcohol), the same being used in the shop for dissolving shellac. Had frequently drunk alcohol in large quantities, and not being able to read the English labels, and supposing from the smell that the stuff was alcohol, he drank it, not knowing it was poisonous. Dr. Bories found him at his residence, where his fellow workmen had taken him. They noticed that he acted very strangely and, becoming alarmed, carried him to his home. One of the workmen stated that he had seen him drink alcohol before, but had never seen him so affected by it. General symptoms, pulse very weak and became countless, temperature subnormal for nearly three days; total blindness, could not discern light; had a ghastly, vacant expression; sighed often and deeply; lips bloodless. In dread of dying; was getting weaker; could not extend his hand; respiration stertorous; movements of limbs convulsive, constantly jerking; speech finally inaudible. Gave him at once 1/60 strychnia and pilocarpin, had him wrapped in blankets which had been wrung out of hot water, syphon to stomach; followed the same by pouring down about 6 ounces of hot, strong, unsweetened coffee, which was retained. Gave him a large enema of salt water. Also gave hypodermic injections of glonoin and had ice-bags placed on top of head and spine. Instructed wife and friends to rub the body well and constantly. Pupils dilated, conjunctiva very much inflamed. After two hours of hard work he showed signs of returning sensibility. One pupil contracted, but the other remained dilated. Lips showed better circulation, body became warmer and he was able to answer questions coherently, but was not able to discern light, although a bright electric light was burning. The following morning he was much better and retained nourishment. Blindness continued for three weeks, when sight was gradually restored. Dr. Kibbe saw the patient three days after he was taken home and advised a continuation of treatment. About ten days after, at the suggestion of Dr. Kibbe, performed venesection, without beneficial results.

(C) CASES HITHERTO UNPUBLISHED OF BLINDNESS FROM METHYL ALCOHOL ABSORBED BY THE LUNGS OR SKIN, OR BOTH.

CASE 1.—(From Dr. W. McL. Ayres, Cincinnati, O.)

W. E. C., aged 44, painter. Six or eight years ago had symptoms of lead poisoning, but his eyes were unaffected by this intoxication and were, so far as he knew, perfectly healthy. Shortly before he was seen by Dr. Ayres (October, 1901), he had been varnishing and shellacing the inside of the closets in one of the large Cincinnati hotels. The shellac had been cut by, or dissolved in, wood alcohol instead of grain alcohol. While in one of the closets he became dizzy, had an intense headache and was forced to stop for a time and get some fresh air. After this he returned to work, but was again attacked by nausea, vomiting and headache, that forced him to discontinue his work entirely for several days. On the third or fourth day his eyesight began to fail, and at the end of a week central vision was 5/100 in each eye.

Examination with the ophthalmoscope disclosed a double optic neuritis, which in a few months was followed by partial atrophy, with a large central scotoma in both eyes. At present he is practically helpless and unable to do any work requiring the use of his eyes.

CASE 2.—(From Dr. Daniel Conboy, Bad Axe, Mich.)

On Nov. 3, 1903, a call was received to visit Mrs. H., aged 58, bright and intelligent, and withal good looking, the latter partly due to the good (though on this occasion, unfortunately, excessive) care she took of her complexion. She was found with sight very much diminished, "almost blind," as she described her condition, central acuity being especially impaired. A large parlor coal-burner about 10 feet distant was recognized by its outline only. The eyes of a person four feet distant appeared like dark spots on a white background, no color or form being distinguishable. This fact, after the exclusion of nephritic and diabetic retinitis by urinalysis, led to a provisional diagnosis of an ocular affection of toxic origin. The trouble had been coming on gradually for two weeks. She also had had vertigo occasionally, particularly at church, and would have fallen the Sunday morning previous had it not been for her husband's help. Autointoxication was suspected, but nothing abnormal was discovered about the digestive tract. Inquiry was then made with regard to the use of Jamaica ginger, with the explanation that the essence of Jamaica ginger, of lemon and similar flavoring and culinary mixtures sometimes contained methyl alcohol, which might cause the condition from which she was suffering. The patient immediately raised her hands in surprise, and stated that she had been using wood alcohol for weeks, both for heating her rheumatic bath and as a cleansing application to her head and face daily, especially on Sunday mornings before church. The alcohol was at once discontinued and sodium salicylate administered *ter in die* after meals. The usual diminution of sight was arrested immediately, but the impaired vision remained *in statu quo* for four or five days, when it began to improve. Both on account of her blindness and the continuous stormy weather, she was unable for over a week to come to the office for ophthalmologic examination. The fundi even then presented an interesting picture. The temporal half of each optic disc showed a pallor very much emphasized by the hyperemia and neuritis of the remaining part. At the first office examination, nearly two weeks after patient was seen, the vision for distance was, R. 7/40 and L. 7/50. On November 18, R. = 7/30, and L. = 7/30. On the 24th, R. was 7/20 and L. 7/30. December 3, one month after first visit, R. = 7/20 and L. = 7/30 —. December 7, R. = 7/20 — and L. = 7/30 +. December 9, R. = 7/20 and L. = 7/30 +. The last examination was on December 18, when both R. and L. were 8/20, which the patient thought was about the same vision that had existed before she used the "nasty stuff." When the papillitis had vanished from both fundi, strychnin in increasing doses was administered in the hope of preventing optic atrophy.

CASE 3.—(From Dr. W. E. Driver, Norfolk, Va.)

E. L., male, white, aged 54, consulted Dr. Driver on June 15, 1901. He gave the following history: In August, 1894, after shellacing the benches and interiors of several school houses he awakened in the morning of the second night to find that he was totally blind. Prior to that time he had not had trouble with his vision. He remained totally blind for about two weeks, when the sight began to improve, especially in the left eye. He thinks the vision in the left eye has improved somewhat during the past two years. The shellac used had been dissolved in wood alcohol.

The general appearance of the eye was that of ordinary nerve atrophy. The pupils were widely dilated and the cornea appeared unusually bright. Right eye, V. = light perception. Iris slightly active to light. Optic nerve bluish-white, showing marked atrophic condition. Tension normal. Left eye, V. = 20/100; with + 50 D. Sph. = 20/70. Cornea very bright and clear. Pupil widely dilated, as in the right eye. Iris slightly active to light. Optic nerve white, showing marked atrophic condition. No other visible disease of fundus.

The diagnosis was optic nerve atrophy from inhalation of wood alcohol.

CASE 4.—(From Dr. Harold Gifford, Omaha, Neb.)

A woman of about 35 came in the spring of 1902, complaining of gradual loss of sight for the past two weeks. Dr. Gifford found the fundus of each eye normal, except for a slight pallor of the outer quadrant of each disc, which might easily be physiologic. Vision, 20/200, each eye, not improved by glasses. Outer limits of the fields normal, but the center of each field showed a large relative scotoma about 30 degrees in diameter, in the center of which the color sense was practically abolished. On being questioned about the possibility of methyl alcohol poisoning, she positively denied ever having drunk methyl or any other alcohol, or any of the various commercial products which are apt to be adulterated with it; but she had been burning methyl alcohol in an alcohol lamp with a large, flat wick for heating water in her room. Her custom for two or three months had been to light the lamp nearly every evening and allow it to burn out. This was during the winter season, in a small bedroom, without any other fire, so that it can easily be imagined that the ventilation must have been somewhat defective. She had nothing else wrong with her that could be discovered. Her vision began to improve almost immediately after Dr. Gifford advised her to stop burning the methyl alcohol, when it gradually rose to 20/20 in the right eye and 20/70 in the left (the left eye had had convergent squint since childhood.) It seems probable, therefore, that the amblyopia was due to the fumes of the methyl alcohol or to the formaldehyd generated in burning it. Considering the relative quantities of the substances which must have been present in the air of the room, it seems more likely to have been the formaldehyd; but whatever the fact in this respect, the case suggests an additional way in which the eyesight can be injured by this villainous stuff.

CASE 5.—(From Dr. J. A. Lippincott, Pittsburg, Pa.)

S. E. S., aged 44, April 12, 1902, worked a whole day varnishing tanks in a brewery, using a varnish which had been mixed with wood alcohol. In the evening when he left his work—according to the statement of his physician, DR. Brock of Waynesburg—he acted like an intoxicated man, and two hours later went into a comatose condition, which lasted 24 hours. When aroused the sight of the right eye was somewhat impaired and that of the left eye was entirely gone. His vision since then has improved considerably. The pupils on both sides small (2 mm.) and sluggish. T. normal. R. E., V. = 15/lxxx. No glass helps. Field of right eye shows moderate concentric limitation. That of left a more decided contraction, and also a small complete central scotoma. The ophthalmoscope showed right disc hazy, left swollen and blurred at margins and vessels tortuous. Advised iodid of potassium, salicylate of soda and nux vomica. June 24, 1904—Did not see the man subsequently, but Dr. Brock, in reply to a recent note, states that the vision of the left eye in time failed entirely. He also states that soon after the poisoning he was taken with left-sided pneumonia, from which recovery was never complete. About six months ago tubercular trouble developed and ended in death June 8, 1904.

CASE 6.—(From Dr. Nelson L. North, Jr., Brooklyn, N. Y.)

H. E. W., German, aged 48; not robust, light weight and poorly nourished. He was employed, with a companion (to whose history this one bears a close resemblance), as a varnisher of closed beer vats. These vats were badly (if at all) provided with ventilation, and wood alcohol was employed to dissolve the shellac used in the varnish. While engaged in this work he experienced the usual constitutional symptoms of methyl alcohol intoxication, and he began to have foggy vision. When seen in hospital by Dr. North, central acuity had fallen to 20/70 in each eye. Optic papillæ pale. Fortunately, in this case prompt treatment was followed by improvement to almost normal in either eye.

CASE 7.—(From Dr. Nelson L. North, Jr., Brooklyn, N. Y.)

A. H. S., German, aged 35, strong and healthy, weighed 190 pounds. He was employed as a beer vat shellacer. During the winter of 1900-1901 he was engaged in his employment of varnishing the interior of ill-ventilated vats with shellac dissolved in wood alcohol. He began to suffer from loss of eyesight, and when seen by Dr. North his vision was 10/200 and there was every indication of optic atrophy, the discs being very white. Abstinence from work and long-continued treatment brought about some amelioration of vision, but improvement of central sight did not extend beyond 20/50.

CASE 8.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

A. J., infant, 6 months old, December, 1903. Parents noticed something wrong with the eyes and thought she could not see. Pupils contracted. After dilatation optic discs were found to be pale, more so on the temporal sides, and the arteries narrow. Parents said they had been burning a wood alcohol lamp by the crib in which the infant slept. Discontinued lamp, and child improved slowly. Total recovery.

CASE 9.—(From Dr. Norton L. Wilson, Elizabeth, N. J.)

O. E. H., aged 42, workman in the cabinet department of a large factory where Columbian spirits were used in mixing shellac and other polishing mixtures. His vision was reduced to 10/200. His discs were pale and the vessels were small. He was also a whisky drinker, but said he never drank wood alcohol to his knowledge. He probably absorbed it through his hands, as he frequently bathed his hands in Columbian spirits to "cut" the shellac.[4]

It has been claimed by some observers that serious intoxication from inhalation or from "alcohol rubs" is not only highly improbable, but that its occurrence has not as yet been experimentally proven. They assert that sufferers from methyl alcohol blindness who have been working with the poison in closely confined chambers have drunk some of the methylated liquor and have suppressed the fact. Moreover, the amount actually absorbed must have been too small to produce serious effects. It is further claimed that amblyopia among workers in hat factories, where the air is highly charged with the fumes of methylated spirits used in dissolving the resins required for "stiffening" the straw, rarely or never occurs.

On the other hand, many of the alleged cases are so well authenticated; a few of them have occurred in children; it is well known that in those people who are not immune to the poison a very small quantity of methyl alcohol is sufficient to produce blindness, and, finally, the absorption of rebreathed air with wood spirit fumes certainly adds to the toxicity of the latter; in hat factories, also, the fumes are constantly diluted by fresh air. If this be true of wood alcohol inhalation, it is probably also true, albeit to a less degree, of the poison absorbed by the skin. On the whole, we must conclude that it is safer to avoid absorption of the poison in any of its forms.

(D) CASES (HITHERTO UNPUBLISHD) OF DEATH FROM METHYL ALCOHOL POISONING, WITHOUT HISTORY OF PREVIOUS BLINDNESS.

CASE 1.—(From Dr. Emil Bories, Seattle, Wash. Reported by Dr. Hamilton Stillson, Seattle, Wash.)

J. F., Irish, tramp by occupation, was, Feb. 8, 1902, picked up in an alley in a state of collapse after drinking a large quantity of "union spirits" (wood alcohol). When found he had a bottle in his pocket which originally contained about four ounces, from which at least one-half had been taken. He was taken to the city jail. No method of treatment sufficed to revive him, and he died about 45 minutes after reaching the jail. Pupils widely dilated, bloody mucus running from mouth, involuntary defecations from bowels. Patient was a well-built and apparently robust man.

CASE 2.—(From Dr. Randolph Brunson, Chicago.)

B. M., a negro woman, aged about 40, was in good health and apparently had no organic lesions of any kind. She was in the habit occasionally of getting on a "spree" of two or three day's duration, drinking whisky. After having been on one of these debauches two days, she was found on her bed uncon-

4 As taking a drink from the supply of alcohol kept for dissolving the gums used in making varnishes is a very common habit among varnishers, it is probable that this patient drank wood alcohol, thinking it was ethyl spirits, or not knowing that the dissolvent was poisonous.—C. A. W.

scious, and died about an hour afterward. A pint bottle labeled Columbian spirits was found on the table, and more than one-half of the contents had evidently been drunk. It is a not uncommon custom for negroes and "poor" whites to mix equal quantities of whisky and alcohol and drink it, as the alcohol is cheaper, and the results the same as if whisky alone is used. The subsequent investigation disclosed the fact that this woman had purchased the bottle of alcohol at a drug store, the druggist supposing that she wanted to use it as a burning fluid. There seemed every evidence that she had been drinking the Columbian spirits. No ophthalmic examination was made, as she was dying when found.

CASE 3.—(From Dr. George A. Fagan, North Adams, Mass.)

Dr. Fagan saw Mrs. X., aged 29, at 10 a. m., Feb. 15, 1904. The patient was the mother of five children. Nationality, French-Canadian. He found her in bed, unconscious; eyes partly opened, dull and lusterless. The pupils were somewhat contracted and the reflexes abolished. The face was drawn; mouth opened a little. The muscles of the trunk seemed rigid rather than lifeless. The pulse was not felt at the wrist; heart rapid and feeble; respiration shallow and accompanied by a moan. Body was moist and cold. The temperature was not taken. The woman was a chronic drunkard and had been drinking during the week. Sunday at breakfast she seemed to be pretty well, but suddenly complained of dizziness and weakness, was put to bed and became unconscious. A bottle of Columbian spirits for use in a lamp was found empty, as was a bottle of Jamaica ginger. She was known to indulge in the latter.

Odor of breath aromatic and smelled of alcohol. Dr. Fagan gave intravenous injections of adrenalin and strychnia, also salines by rectum. Body warmed and pulse returned to wrist, but in an hour she died in convulsions.

CASES 4, 5, 6.—(From Dr. Homer Collins, Duluth, Minn.)

Six or eight Indians on one of the Minnesota reservations procured a supply of essence of peppermint and drank freely of it. All suffered severely from gastrointestinal symptoms, and three died from the effects of the poison; one of them blind. Two escaped without, so far as is known, any serious damage, while the sixth (one of the survivors) became totally and permanently blind. The cases of blindness are elsewhere described in this report.

CASE 7.—(From Dr. W. G. Craig, Hartford, Conn.)

J. P., Polish, aged 45, drank, April 30, 1902, a mixture of sugar, water and Columbian spirits as a beverage. This was followed first by nausea and vomiting and later by repeated convulsions, coma and death in 24 hours.

CASES 8, 9, 10, 11.—(From Dr. Joseph Springer, Coroner's Physician, Cook County, Ill.)

About April 10, 1904, five negroes, laborers, between 25 and 40 years of age, bought a large amount, probably a gallon, of wood spirits and drank an unknown quantity of it. Four of them, Thomas Smith, James E. McCarthy, Edward Williams and Silas Robinson died from the effects of the poison. Two, the first mentioned, were found dead, while the others were discovered in their boarding house unconscious. On removal to the hospital (Samaritan and Cook County), one of the three recovered. Dr. Springer found, in each of the fatal cases, the stomach and intestines very much congested and soft. The blood was dark and very fluid. Liver congested and friable. Spleen engorged with dark blood; very friable; tore on removing it. Patches of extravasation in the lungs; hemorrhages into the kidney structure, which showed a passive congestion. The odor and other indications supplied by the stomach contents clearly pointed to poisoning from wood alcohol.

CASE 12.—(From Dr. G. G. Davis, Philadelphia, Pa.)

"The only case of poisoning by wood alcohol coming under my notice occurred late last June or early in July, 1903, at Lily Bay, Me. A lumberman (from New Brunswick, Canada) died from drinking wood alcohol used in painting. He was wildly delirious and died in a few hours."

CASE 13.—(From Dr. J. F. Dickson, Portland, Ore.)

Two men, teamsters, strong, healthy and under 30, who had been working very hard all night, arrived at a friend's cabin in the early morning, much fatigued. The friend told them he would give them something that "would make them feel better." He prepared a drink containing wood alcohol, sweetened with syrup. One man took several drinks, and shortly afterward fell to the floor, unconscious. They picked him up and put him to bed, supposing he was simply drunk. He was found dead that same evening, but the exact hour of his death is not known.

CASE 14.—(From Dr. J. A. Dingman, Spring Valley, N. Y.)

In June, 1903, the doctor was called to see A. McK., aged 47, domestic servant, addicted to chronic alcoholism, who had drunk about 3 p. m. an unknown quantity of fluid from a bottle labeled "alcohol." She was unconscious on his arrival and died in deep coma the next day, about 20 hours after taking the poison. The bottle contained wood alcohol.

CASES 15, 16, 17.—(From Dr. John A. Donovan, Butte, Mont.)

Over two years ago a man in this locality was tried, convicted and sent to the penitentiary for selling intoxicating liquor to the Indians. It was proved that the alcohol in the liquor was methyl alcohol. Three Indians died from the poisonous effects of the drug.

CASES 18, 19, 20, 21, 22, 23, 24.—(From Dr. W. E. Driver, Norfolk, Va.)

R. N., male, white, aged 29, patient of Dr. Hargroves of Deans, Va. With two friends, patient visited Portsmouth, Va., on Sunday, Sept. 27, 1903. Not being able to procure intoxicating drink, they all imbibed freely of essence of lemon. He was made drunk and otherwise ill. Sight not affected. He did not recover from the effects of the intoxication and gastritis, and died on the sixth day. The two associates of this man died after a week's illness, never having recovered from the debauch. During Dr. Driver's investigations of three cases of methyl alcohol amaurosis (reported under class B), he learned that four other people—boon companions of the patients who survived and subsequently became blind—had died with the usual symptoms of acute wood alcohol poisoning. As these cases occurred in a part of the country not covered by any report included in this investigation, we may safely publish them as four additional examples of death from drinking methylated preparations, in spite of the lack of more definite information.

CASE 25.—(From Dr. Calvin R. Elwood, Menominee, Mich.)

C. H., cook in lumber camp, while in woods went on a spree with lemon extract in November, 1903. On Tuesday he received 12 bottles of the extract, and by Friday had drunk seven of them. He spat some blood on Thursday, and his fellow workman warned him that the lemon extract was killing him. He replied that it was, but he couldn't leave it alone. He continued the debauch the following day and evening, when he suddenly fell over dead, taking his last drink only a few minutes before death. This man was a habitually heavy drinker, and had been on a rather protracted spree just before he received the consignment of lemon extract.

CASE 26.—(From Dr. Charles Enfield, Jefferson, Iowa.)

In 1901 an adult, being unaware of the poisonous character of wood spirits, and only knowing it to be a cheap form of alcohol, purchased a pint in Jefferson for use as a beverage. He drank it all while on his way to a neighboring town and died in a few hours. These facts were fully established at the coroner's inquest.

CASE 27.—(From Dr. H. P. Engle, Newton, Iowa.)

Mrs. N., Mingo, Iowa, aged 20, drank, as evidenced by sworn testimony, a "few ounces" of diluted Columbian spirts. This was followed by gastrointestinal irritation and sudden death in 20 hours.

CASE 28.—(From Dr. H. P. Engle, Newton, Iowa, and the Des Moines, Iowa, *Register-Leader* of May 31, 1904.)

Mt. Ayr, May 30, 1904 (Special.)—"Abe Baker is dead, Glenn McLeish is so ill as to require the attendance of two physicians, and others of their party are suffering as a result of drinking wood alcohol at the close of a protracted spree. The scene of the tragic occurrence is in Worth County, Mo., near the town of Allendale and about three miles south of the line of Middle Fork Township, this county. The men had been on a spree for several days, and late Friday evening Baker and McLeish were found not far from the latter's home, about 13 miles southwest of Mt. Ayr. They begged bed clothing from the tenant on Joseph Dehart's place and slept in an unoccupied house, declining an invitation to spend the night in the dwelling. The next morning Baker was discovered dead and McLeish in a critical condition, while reports came that others of the crowd were suffering. The coroner's jury decided that Baker's death was due to drinking wood alcohol. Baker was single, about 30 years of age, and a good deal of a wanderer, having lately returned from the west. McLeish is about 17 years of age and the only son of a widowed mother."

CASE 29.—(From Dr. W. H. Ford, Sulphur, Ind. Ter.)

About Oct. 1, 1903, four men, from 30 to 40 years of age, went on a spree with bay rum made from methyl alcohol. Two were barbers and two Territory sportsmen. One of the barbers, W. A., aged 39, was found dead after drinking probably a

quart. Autopsy showed the mucous membrane of the stomach extremely congested; it "resembled a piece of black rubber." The odor of wood alcohol was very strong.

CASES 30, 31.—(From Dr. Allen A. Greene, Anniston, Ala.)

Two employes, McK. and C., of the Interstate Roofing Company in Anniston were sent, June, 1898, to Montgomery, Ala., to assist in building a roof over the passenger station there. Wishing to get a drink, and finding the saloons closed, they sent, in the afternoon, to a drug store and purchased eight ounces of alcohol, not specifying the kind they desired. The druggist sent wood alcohol. They invited an employe of the L. & N. Railroad Company to join them and proceeded to drink the poisonous fluid. When toxic symptoms set in a physician was summoned, who used a stomach pump. In spite of his efforts, two of the men died within a few hours after drinking the mixture. The railroad employe, who survived, stated that he had taken only a small quantity of the wood spirits and on a full stomach.

CASES 32, 33.—(From Dr. Allen Greenwood, Boston, Mass.)

Several years ago three painters, living in the adjoining town of Newton, were in the habit of drinking alcohol mixed with water, taking the alcohol (used as a solvent) from the barrel in which it was kept. Wood alcohol was substituted in this barrel for ethyl alcohol, with the result that two were poisoned and died.

CASE 34.—(From Dr. G. E. Hartshorn, South McAlister, I. T.[5])

G. G., white, barber, of Haileysville, I. T., drank a pint of bay rum, March 23, 1904. Death occurred in 12 hours.

CASE 35.—(From Dr. G. E. Hartshorn, South McAlister, I. T.)

Ed. W., aged 16, on Dec. 23, 1902, drank nearly a pint of wood spirits, thinking it was grain alcohol. Died in six hours.

CASES 36, 37, 38.—(From Dr. Reid Hunt and Dr. H. A. Stansfield of the Public Health and Marine-Hospital Service, Washington, D. C.)

In California, about 1894, when Dr. Stansfield was connected with a drug store, he sold four Italian woodchoppers a quantity of wood alcohol. They went on a "spree" with it, and three of them died. None of these cases have been included in other reports furnished for this investigation.

CASES 39 and 40.—(From Dr. Reid Hunt, Public Health Service, Washington, D. C.; being two autopsy reports of Dr. L. W. Glazebrook, Coroner for the District of Columbia, 2022 P St., N. W., Washington, D. C.)

Autopsy Cases, vol. xii, p. 4, No. 566. Dated Dec. 21, 1903. Arthur P. Baer, died, Washington Barracks; color, white; occupation, soldier. Previous history: "Man has been drinking, so the authorities say, for some time, and used every means to get intoxicants." Odor of wood alcohol about mouth. Stomach markedly distended, and acutely irritated; marked odor of wood alcohol. Remarks: Man had had access to the place in which wood alcohol was kept.

Autopsy Cases, No. 150, Jan. 24, 1899. Name, Joseph Washburn, negro, cook, aged 48. Drank a gill of wood alcohol early one morning. He groaned and had intense cramps and vomiting. The alcohol was for use in a coffee urn burner. He was sent to the Emergency Hospital and died at 9:45 a. m. Stomach had marked odor of wood alcohol. At the base of the brain two ounces of water infusion. Marked odor of wood alcohol.

CASE 41.—(From Dr. Reid Hunt, Public Health Service, Washington, D. C., and the Baltimore *News*, Feb. 27, 1904.)

E. E., a woodsman, said to be from St. Louis, died at Horton, W. Va., yesterday, from drinking "hot drops" as a substitute for whisky. Analyses of these same hot drops, sold in Virginia two or three years ago, showed the presence of about 95 per cent. wood alcohol.

CASE 42.—(From Dr. J. H. Jamar, Elkton, Md.)

While acting as surgeon to the jail in Elkton, Dr. Jamar had under his care three cases of wood alcohol poisoning in habitual drunkards. The first case was that of a woman, who, with a male companion, tramping about the country, begged money and bought six ounces of methylated spirits. They went on their way and when three miles from town proceeded to drink the mixture. The woman was soon unconscious and was removed to a neighboring farmhouse. She shortly afterward died comatose, in spite of Dr. Jamar's efforts to revive her.

CASES 43, 44, 45.—(From Dr. G. L. Knowles, Maquon, Ill.)

About December, 1902, the newspapers reported that in a suit Mrs. D. of Maquon obtained damages for the death of her husband, poisoned by lemon extract, and that two others also died from the same debauch. Dr. Knowles has kindly furnished the following comments on these three cases: "No. 1 was that of a farmer, aged about 35. He had been an intemperate man all his life, or from early manhood. I have no knowledge of his last symptoms. An eight ounce bottle, one-fourth full, labeled lemon extract, was found in his possession. So far as I know, no analysis was made of any of the cases. No. 2 was that of a blacksmith, aged 65, an inebriate from boyhood. He was found dead in his bed, and lying beside him was a bottle similar to that used by No. 1, about a quarter full of lemon extract. No. 3, a farmer, was a victim of the same poisoning and was very ill for two or three days prior to death. The two prominent features of these cases is that they were all backsliding graduates of the "Keeley Cure," and that it required about six ounces of the decoction to kill each individual.

CASE 46.—(From Dr. R. H. Main, Barry, Ill.)

Dr. Main reports a recent death (June 30, 1904) of a man, aged 40, from drinking Jamaica ginger. The victim was a pedler, apparently in good health, who sold this essence about the country. It was manufactured by a patent medicine "concern" in Peoria, Ill. Dr. Main's analysis of the liquid showed it to be made from methyl alcohol. The patient, unaware of its poisonous qualities, drank the compound for its intoxicating effects.

CASE 47.—(From Dr. J. G. McKinney, Barry, Ill.)

April 18, 1904, G. K., a painter, aged 25, was greatly addicted to drink. He was employed to do a job of painting, and drank the methyl alcohol that was intended for filling the knots in the wood before painting. Death followed in a few hours as a result of the drink.

CASE 48.—(From Dr. H. S. Miles, Bridgeport, Conn., and the Bridgeport *Telegram-Union*, July 23, 1904.)

Sheridan Knowles of this city, aged 45, a private in the United States Coast Artillery, stationed at Fort Terry, Plum Island, N. Y., died yesterday afternoon after drinking a quantity of wood alcohol. Knowles had been drinking heavily of late and made visits to New London, Conn., at every opportunity during the week. Each time he imbibed freely, and finally returned to the island for the first time Thursday. He was finishing his spree, and could not stop entirely from drinking liquor, so that the temptation to drink the wood alcohol was more than he could resist, although he knew well the deadly effects of the poison. He was the barber of the fort, and so had no difficulty in getting what he wished from the barber shop. He drank the wood alcohol, and inside of an hour was dead. This is the seventh case of wood alcohol poisoning at Fort Terry within a few months.

CASES 49, 50.—(From Dr. J. E. Minney, Topeka, Kan.)

In the year 1889 nine Poles, living in this vicinity, together indulged in a spree, toward the end of which they bought and consumed nearly two gallons of wood alcohol. Two promptly died from the acute intoxication; the other seven recovered. As related elsewhere, one of the latter became blind.

CASE 51.—(Newspaper report, Feb. 1, 1903.)

P. O., engineer in the Straube Piano Company, Downer's Grove, Ill., was found dead in his room in East Grove. Near his body was a bottle of wood alcohol, from which he had evidently been drinking. It is not known, however, whether he drank the fluid by mistake or intent.

CASES 52, 53, 54.—(Newspaper report, Philadelphia, October, 1903.)

Frank Helms, aged 43; Thomas Helms, 24, and William Conn died to-day from drinking wood alcohol. The first two, who were brothers, died while on their way to the hospital; the third, after reaching it.

CASE 55.—(Newspaper report, April, 1903.)

The death is announced, in Rockland, Mass., of Mrs. Frank Progin from drinking wood alcohol.

CASE 56.—(From Dr. J. A. Patton, Stillwell, Ind. Ter.)

L. G., aged 65, carpenter. Had drunk lemon extract for three or four days in company of friends, whose cases are also described in this report. He lived alone, and some friends, hearing of the death of one and the sickness of his other companion, went to his room about 10 p. m., Feb. 28, 1904. He answered and seemed all right. At daylight, the morning of the 29th, other parties, getting no answer to their questions, broke into the house and found him dead. Dr. Patton saw him soon after death; his limbs were flexed, head drawn back, and he presented every appearance of having died in a convulsion.

The lemon extract was analyzed and shown to contain wood alcohol.

CASE 57.—(From Dr. George H. Powers, San Francisco, Cal.)

5. Charlotte, N. C., Medical Journal, 1903, p. 104. This and the next case, although previously published, are recorded here as they are not referred to in other recent articles on this subject. —C. A. W.

A. C. G., aged 26, took during the night a single dose of wood alcohol with suicidal intent. He was found dead in bed next morning, the interval of the ingestion of the poison and the fatal issue being less than eight hours. Dr. Powers was present at the autopsy, which revealed great congestion of the vessels of the stomach and intestines, and a very strong and characteristic odor of wood alcohol.

CASE 58.—(From Dr. E. H. Robb, Newton, Iowa. Reported by Dr. H. P. Engle.)

G. C., a barber, aged 60, after a debauch, drank three or four ounces of bay rum made with wood alcohol. Shortly afterward gastrointestinal irritation, dilated pupils, irregular heart action and death in 36 hours.

CASE 59.—(From Dr. O. J. Short and the Coroner of Garland County., and Dr. A. D. Shaw, Hot Springs, Ark.)

W. T. was one of three young men who went on a spree and drank an unknown quantity of wood alcohol. All three suffered from severe abdominal distress and lost consciousness. One of them survived and testified that on awakening from his stupor he found himself alone. Search was made, and the bodies of his companions (see next report) were discovered.

CASE 60.—(From Dr. O. J. Short and Dr. A. D. Shaw, Hot Springs, Ark.)

J. A., the companion of the man mentioned in the foregoing report, was found dead after a wood alcohol debauch. A third party to the spree vomited almost immediately after drinking the alcohol, and, although he had cramps in his stomach and became unconscious for a time, finally recovered, apparently without permanent damage, and was able to give an account of what had happened previous to the death of his fellow sufferers. A postmortem examination revealed all the appearances of wood alcohol poisoning.

CASE 61.—(From Dr. C. Storz, Toledo, Ohio.)

W., man, aged 42, painter and paperhanger by occupation, died April 16, 1904, at the Marine Hotel, East Toledo. He drank a few ounces of wood alcohol and succumbed within two and one-half hours. This alcohol he had used as a liniment on a limb which he had broken about five months before. He woke his roommates and complained of terrible pains in his stomach and abdomen and said that he had drank some of the alcohol. He asked them to open the windows, as he was in want of fresh air, and suffered a great deal. When the physician arrived he was unconscious, and died within a few minutes.

CASE 62.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

R., aged 36, October, 1900, Indian Territory. A protracted spree on bitters. He died on the third day, with symptoms of wood alcohol poisoning.

CASE 63.—(From Dr. C. Storz, Toledo, Ohio.)

I. B., a well-educated Hebrew, aged about 40, died at the infirmary hospital of wood alcohol poisoning, April 9, 1902. The man was addicted to the habitual use of alcohol and, consequently, was very much demoralized. In tramping from one town to another he reached Toledo a few days previous to his death. Being too poor to obtain liquor in the usual form, he bought four ounces of wood alcohol in a drug store and drank most of it. He soon became very ill, complained of pains in his abdomen, and in a couple of hours became unconscious. He was sent to the infirmary hospital and died soon after his arrival, possibly within three or four hours, without regaining consciousness.

CASES 64 and 65.—(From Dr. J. W. Scales, Pine Bluff, Ark.)

J., male, aged 45, and S., male, aged 42, both of Ogama, Ark., drank, each, three bottles of Jamaica ginger and two of bay rum in December, 1900. Both died during the following night, with all the symptoms of wood alcohol poisoning.

CASES 66, 67, 68.—(Courtesy of the Surgeon General of the Army and of the surgeon in charge of the post at Fort Terry, N. Y.)

Private J. W. R., aged 36, Company C, A. Had been habitual drunkard. Returned to post after protracted spree, Feb. 26, 1904. About noon, February 29, went to hospital complaining of abdominal pain and showing evidences of spree; was not seen by surgeon at the time. At 8 p. m., same day, he returned to hospital; condition of profound collapse; intense pain in abdomen and lumbar region; temperature, 96; pulse thready, 50; respiration, 12, sighing; cyanosed; extremities, cold; surface of body, clammy; said he had "drank a little Florida water" and wanted something for the pain in abdomen. Assistant Surgeon R. was called immediately, but when he reached the patient he was unconscious, with above symptoms intensified. Temperature, 92; pulse, 42, scarcely perceptible; breath cold, but reeking of alcoholic fumes, which even at the time smelled peculiarly of the acid property of the methylated alcohol, or the pyroligneous acid in it. Heroic stimulation was of no avail, and the man died, 8:49 p. m.

"Investigation showed that this man and four others had been drinking the day previous from a large bottle of Columbian spirits, not knowing that it was wood alcohol, or not caring what it was, just so it was "splits" (alcohol). This Columbian spirits had been used by the company barber to mix his toilet articles, and he told us he had bought it as, and for, such. The odor and burning properties confirmed his assertion."

Corporal T. O'B., 23 years, Company C, A., was found in quarters, at time of investigation, drunk (this was about 9 p. m., February 29). When shown the bottle and told of death of Private R., he became nauseated, through fear it is believed, but declared he had not taken any of the contents of the bottle, nor had he ever seen bottle before.. Corporal O'B. was sent to hospital; temperature at 9:30 was 95.5; pulse 82, soft; mind clear, conversation rational. Temperature taken every half-hour during the night ranged from 95.5 to 96 at 7 a. m., when the collapse came, the temperature dropping to 92. Pulse during night from 80 to 94, soft. Became unconscious at 7:16, a moment after he had "cussed out" the attendant for his trouble. Same profound collapse as in the previous case. In addition to the treatment used previously, a varying strength of galvanic electricity was used, the heart only responding for a minute or so to each stimulation. About five minutes before death clonic spasms beginning with the orbicularis palpebrarum and extending thence downward over the entire body and limbs, to the number of about ten, ensued at about ten seconds' interval. Death.

Private M. O'C., 36 years, Company C, A., was found in his bunk at the same time others were found, but was too drunk to take to hospital, and his condition was only what one would expect in such a case, the bottle of whisky being found in his locker. Denied boisterously that he had taken any wood alcohol. Next morning he was apparently no worse than was expected; temperature, 99; pulse, 86, fair. Protested strenuously against being put in hospital, again declaring that he had not touched the wood alcohol. He was watched all that day and temperature taken every half-hour, ranging from 99 at time of admission to 97 at 2 a. m., March 2, when it dropped to 92 at 2:15 (this collapse coming just after he had finished a tirade against all the medical corps for not believing what he told us). His symptoms from that on were identical in every way with those of previous case, even to the spasmodic contractions. Death at 3:05 a. m.

CASE 69.—(Reported to the Surgeon General of the Army by the acting assistant surgeon at Fort Banks, Mass.)

"I have the honor to make the following report of an autopsy made on the body of Private A., who died at this hospital on June 21, 1900 (Case No. 709, sick and wounded report for June). The man had been drinking heavily of late, and the day before his death had been asking one of the mechanics at the post for some wood alcohol, which request was refused. This information relative to his asking for wood alcohol was not obtained until after I had made the autopsy. The man was moribund when admitted to the hospital at 4:35 a. m., June 21, 1900, and died the same morning at 5 o'clock. The autopsy was made six hours after death. The body was that of a well nourished man. Rigor mortis and lividity of the dependent parts were noted. No external marks were visible. Brain slightly edematous and presented strong odor of wood alcohol; lungs normal except for strong odor of wood alcohol; heart normal in size, slight thickening of endocardium, blood in right and left auricles liquid and black, and had a strong odor of wood alcohol; liver normal except for a strong odor of wood alcohol; spleen small, dark in color and of good consistency; stomach contained about six ounces of dark greenish fluid, which had strong odor of wood alcohol; lining membrane of stomach covered with mucus, with areas of reddened patches and points due to submucosal hemorrhages; kidneys normal in size, capsules not adherent, cortex appeared perfectly normal, pelves and calices filled with pus; intestines normal with the exception of the sigmoid flexure which had two distinct strictures; bladder normal and contained about two ounces of urine, highly perfumed with wood alcohol. Cause of death, acute poisoning from methyl alcohol; source unknown."

CASES 70 and 71.—(Reported to the Surgeon General of the Army by the surgeon at Fort Terry, N. Y.)

Record Case No. 809. Private B. was admitted to hospital at about 9:15 p. m., Oct. 30, 1902, with acute alcoholism. He was put in bed, heat applied and aromatic spirits of ammonia given, and later 1/60 of a grain of strychnin hypodermically.

At about 9:45 he had a convulsion followed by collapse. Stimulation with strychnin, whisky and ether had little effect, and he died from cardiac paralysis at 10:07 p. m.

At this time Private C. was found on the floor of his quarters (tailor shop) in a state of profound collapse, and was brought to the hospital. Heat was applied and stimulants given, but without avail, and he died without regaining consciousness shortly after admission.

On investigation it was found that these men had been drinking heavily for several days, and being unable to procure more liquor, they concocted a punch from 13 bottles of bay rum, one of witch hazel, one of vanilla extract and one of hair oil, with sugar, lemons and water, of which mixture they drank deeply.

Case 72.—(Report to the Surgeon General, U. S. Army, through the chief surgeon, Department of Dakota, by the surgeon at Fort Snelling, Minn.)

"I have the honor to submit the following report of two cases of methylic alcohol poisoning caused by drinking for purpose of intoxication an inferior quality of bay rum made from bay oil dissolved in wood spirit. A. was admitted to the hospital March 16, 1904, complaining of severe pains in the stomach and persistent vomiting with headache. His mental condition was not clear. His temperature was 98.4. He denied having been drinking. His urine contained albumin in large quantities. The patient became gradually unconscious, his respiration became labored and he died about 6 p. m. on the day of admission from paralysis of respiration. The heart continued to beat for some time after the cessation of respiration. Postmortem examination showed the following conditions: Brain much congested, blood dark and fluid, mucous membrane of stomach showing evidences of irritation with numerous small ecchymoses; no odor of bay rum or wood alcohol; kidneys markedly congested; liver and spleen somewhat congested; heart filled with dark fluid blood. Organs otherwise normal.

The other man, Private B., did not report at the hospital, but in investigating the cause of Corporal T. O'B.'s illness it was found that he had been drinking bay rum in company with Private B., who was the company barber, and that B. had been lying on his bunk in the barracks sick all day, but had not reported at the hospital. He was sent for at once and brought to the hospital on a litter. He complained of pain in stomach and persistent vomiting. His temperature was 97.6. His urine contained albumin and epithelial tube casts. The albumin in the urine continued present in lessening amounts until March 23, when it disappeared, and he made a satisfactory recovery and was returned to duty March 27.

Cases 73 to 81 inclusive.—(From Dr. James P. Widmeyer, Rolla, North Dakota.)

On the evening of Wednesday, Aug. 31, 1904, an unknown number of Indians of the Turtle Mountain Reservation went on a spree, and being unable to obtain the ordinary alcoholic beverages, secured a large number of bottles of "Florida water" and, it is reported in the papers, lemon extract, and drank freely of them. Nine Indians died, most of them Friday morning, September 2, and a survivor is known to have become blind. Empty "Florida water" bottles were found in the Indian encampment after the debauch. All who partook of the spirits complained of burning in the stomach and bowels, pain in the head, slow pulse (as low as 43); finger nails and lips were blue and they finally died comatose. Investigation showed the fluids to be largely methyl alcohol.

Case 82.—(From Dr. G. H. Woodward, New York City.)

"A man of my acquaintance (from Longdale, N. Y.), died from drinking essence of lemon and witch hazel. He got on pretty well with the lemon, but died very soon after taking the witch hazel."

(To be continued.)

Report of Antimalaria Expedition to East Africa.—The *Zeitschrift f. Hygiene*, xlv, No. 3, 1903, publishes Ollwig's report of the application of Koch's method of malaria prophylaxis to the Dar-es-Salaam region in eastern Africa. The conditions were peculiarly unfavorable for its success, owing to the shifting population, the dampness of the surroundings, etc., and consequently the result was not a complete success. It proved possible, however, to materially reduce the morbidity from malaria and prevent its spread.

A SIMPLE METHOD OF CYSTOSCOPY.

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Specialists, and a gradually increasing number of the profession, regard cystoscopy as a diagnostic measure of merit. A multiplicity of instruments and variety of technic have contributed not a little to a feeling of distrust and reluctance to accept it by the profession at large.

Of the many kinds of cystoscopes most of them have been devised or modified by the pioneers in genito-urinary diagnosis. In the hands of its originator probably each instrument is a success, but in the hands of a stranger many are more or less of a failure.

Water dilatation of the bladder seems the rational method. The difficulty or impossibility of examining an occasional bladder, from blood or pus clouding the inflating fluid, led to the devising of instruments to be used with air dilatation. Air in the bladder is a foreign body and by the conscious patient is treated as such. Frequent sponging to remove urine or blood is provocative of further hemorrhage and increases the difficulties. Nevertheless, it may be possible to make a fairly satisfactory inspection of a bleeding bladder by means of an air inflation where many of the water instruments would fail.

A clear fluid readily transmits light, therefore a column of clear water filling the shaft of a cystoscope will do the same. The avenue of ingress and egress for air will just as readily admit water. The air-dilating cystoscope is a large open cylinder made to admit of ready sponging. This very fact makes irrigation through it very thorough and rapid. By attaching a fountain syringe filled with sterile saline solution to an instrument of this character one secures the advantages of water inflation, together with the possibility of quickly evacuating the fluid, in case it becomes clouded, and replacing it with clear. The only interruption to the inspection is the few seconds required to empty the bladder. As soon as the clear fluid is again allowed to flow in, the examination can be resumed, the inflowing fluid transmitting the light as readily as if it were stationary. The stream is entirely under control; by means of the stopcock with which all air instruments are supplied, it is stopped or started; by raising or lowering the irrigator, its force is increased or decreased. Under the guidance of the eye the stream can be directed toward the suspected areas; blood clots and clinging mucus or pus may be dislodged and the margins of ulcers thus clearly exposed. Tumors which appear as flat elevations on the bladder walls may be demonstrated to be villous by directing the stream against them or around their edges. Cloudy urine discharging from a ureter may obscure the field in that part of the bladder, but a single jet of clear fluid will clear that neighborhood and the ureteral opening may be located before the next discharge of urine occurs. The area surrounding the ureteral openings can be mechanically cleansed by directing the force of the stream to that neighborhood.

The above specific instances may serve to illustrate the applicability of this method to almost any bladder condition. Practically, it means transforming an air inflating cystoscope into an irrigating instrument; an instrument, too, which admits of rapid and thorough irrigation and permits the guiding of the inflowing stream where one wills, and of greater efficiency than many which have been specially constructed for irrigation. Discomfort from distension or clouding of the fluid is the signal for

removing the window and allowing the bladder to empty. Turn on the water, replace the window and resume the examination. This may be repeated many times in an ulcerated, contracted bladder, or in one which is freely bleeding, and makes possible a satisfactory examination of any bladder.

Three years' use of the above technic, with air inflating cystoscopes, justifies its recommendation as a safe, simple and practical method.

BONE CYSTS.

A CONSIDERATION OF THE BENIGN AND ADAMANTINE DENTIGEROUS CYSTS OF THE JAW AND BENIGN CYSTS OF THE LONG PIPE BONES.*

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Recent accumulated experience, in the ultimate results after amputation for sarcoma of the long pipe bones, and complete resection for sarcoma of the upper and lower jaw, has demonstrated that local recurrence is unusual, but death from internal metastasis is common in a certain number of cases. When these cases are studied pathologically it is found that the patients who have remained well suffered from special types of sarcoma essentially different from the tumors removed from the patients who ultimately succumbed to internal metastasis. In other words, we were not accomplishing a cure in the latter group of cases even after amputation at the highest joint, because internal metastasis takes place early and is present at the time the patient seeks surgical treatment, and we were subjecting the first group of patients to an unnecessarily extensive operation.

In 1899[1] I discussed the literature and the experience of the surgical clinic at the Johns Hopkins Hospital in regard to the different relative malignancy in sarcoma of bone, and that in certain varieties much less extensive operations would accomplish a cure with as great a certainty as amputation at the highest joint.

Experience has demonstrated that, in some cases, curetting is sufficient; for example, the benign bone cysts of the long pipe bones, dentigerous cysts of the jaw and medullary giant-cell sarcoma. The latter was advocated many years ago by Koenig. In other cases resection, the extent of which is indicated by the local infiltration of the disease. For example, the various forms of epulides of the upper and lower jaw; the periosteal and medullary giant-cell sarcoma; the periosteal fibrosarcoma and osteosarcoma; the myxochondrosarcoma and a special tumor of the jaw—the cystic adamantine epithelioma. Such local resections as against amputations have been advocated by von Mikulicz, Weisinger, Morton, Karewski, Hinds.[2]

Amputation is indicated in these varieties of sarcoma only when the necessary resection would result in a useless limb. Infiltration of muscle is not a positive indication for amputation. In this group of cases amputation at the highest joint, except due to the position of the tumor, is never indicated.

In April, 1901, in a discussion before the Philadelphia Academy of Surgery,[3] I advocated this more conservative procedure. Since then the further experience of Dr. Halsted's clinic and my own and the reading of the literature have accumulated additional facts justifying the more conservative operation in this group of sarcoma of bone, of relatively low malignancy.[4]

In December, 1902, I removed with the curette a large medullary giant-cell sarcoma filling and expanding the upper third of the tibia.[5] This patient has no evidence of recurrence and a limb with unimpaired function.

The experience of the surgical clinic in tumors of the jaw and long pipe bones can be expressed in a few words.

In Group 1 the patients have remained well since operation, the time varying from six months to twelve years. There has been a slight operative mortality, and a few cases in which, on account of the size and position of the tumor, the disease was considered inoperable.

Benign Cysts of Long Pipe Bones.—Three cases; one died after operation (Fig. 2); 2 cases are well.

Benign Dentigerous Cysts.—Ten cases (upper jaw, 4; lower jaw, 4; ethmoid, 2 cases). Inoperable, no cases. Death after operation, 2 cases (Figs. 5 and 6). In these two instances a complete resection was performed. Well, 8 cases. In these 8 cases the operation consisted in partial removal of the bony wall, curetting and packing.

Adamantine Epithelioma.—Twelve cases; inoperable, one case (Fig. 8). Death after operation, 1 case (Fig. 9). Well, 10 cases. In one instance there was a second operation for local recurrence; this patient has remained well eight years since the second operation.

PERIOSTEAL SARCOMA.

Epulis.—Twenty-three cases; upper jaw, 13; lower jaw, 10. One patient died of pneumonia; in this case, an extensive giant-cell tumor of the lower jaw, it was necessary to do tracheotomy and perform a complete resection of the jaw. Well, 22 cases. In all of these cases the operation consisted of removal of the tumor with the alveolar border of the jaw. In only one case was there a local recurrence, and this patient has remained well since the second operation.

Spindle-cell Fibrosarcoma or Myxosarcoma.—Eight cases; antrum, 3, all well; lower jaw, 3, 2 well, 1 died of pneumonia after complete resection; orbit and antrum, 2 cases; 1, a young child, died after an extensive operation; the other, also a child, has remained well since the less extensive operation, two years.

Osteosarcoma.—(I employ the term osteosarcoma only in those periosteal tumors in which new bone formation predominates.) Eight cases. Lower jaw, 4; 2 well, 2 refused operation. Upper jaw, 2, both well. Long pipe bones (humerus and fibula), 2; both well.

Giant-cell Sarcoma.—Those situated on the jaw and called epulis have already been considered. It is a rare tumor of the long pipe bones. We have observed three cases: Ulna, 1 case, resection, well twelve years. Tibia, upper third, 2 cases, both well; in both the tumor was recurrent; in one the tumor was excised without destroying the continuity of the tibia, in the other the limb was amputated at the thigh.

MEDULLARY SARCOMA.

Giant-cell Tumors (Myeloma).—Eight cases, all well; lower jaw, 1; long pipe bones, 7.

Myxochondrosarcoma.—Three cases; one involving the sacrum, inoperable; one involving the upper third of the humerus, well; one of the femur, death two years after operation from tuberculosis of the lungs.

Seventy-eight bone tumors in this group are either benign or of relatively low malignancy. Sixty-nine cases are well, two inoperable; two refused operation; seven died after operation. In six of these cases the

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. V. C. Vaughan, Frank B. Wynn and Joseph McFarland.

1. Progressive Medicine, December, 1899, p. 234.
2. Progressive Medicine, December, 1899, pp. 38-42.
3. Annals of Surgery, 1901, vol. xxxiv, p. 94.
4. Progressive Medicine, 1902, pp. 151-186.
5. Johns Hopkins Hospital Bulletin, May, 1903.

tumor involved the upper or lower jaw. In these six cases, I believe, a less extensive operation could have been performed which would have reduced the dangers of the operation, but not the probabilities of an ultimate cure.

Group 2 includes patients who have not been cured, either because the condition was inoperable when they presented themselves at the clinic, or because of death from internal metastasis after operation.

PERIOSTEAL TUMORS.

Spindle and Round-cell Sarcoma.—Six cases; lower jaw, 2; long bones, 4.

Perithelial Angiosarcoma.—Long bones, 2 cases.

MEDULLARY TUMORS.

Spindle and Round-cell Sarcoma.—Long bones, 4 cases.

Perithelial Angiosarcoma.—Long bones, 2 cases.

In these 14 cases a complete operation was performed. In the 12 cases of the long pipe bones a high amputation; in the 2 jaw cases, an extensive resection. In every case death has taken place, usually within a year after the first symptom of the tumor. In only 1 case was the duration of life longer than two years.

Sarcoma of the Upper Jaw Involving the Antrum.—Clinical diagnosis: Six cases, all inoperable.

Carcinoma of Upper Jaw.—Twenty-one cases; inoperable, 16; 1 death of pneumonia; remainder not cured.

We have, therefore, observed 41 cases of tumors involving bone of a relatively high malignancy, none of which has been cured as compared with 78 of a relatively low malignancy, of which 69 are well.

These facts demonstrate the hopelessness of the more malignant varieties of bone tumors.

Surgeons who take the view advocated in this paper must educate themselves to recognize clinically, or through the Roentgen negative, or at the exploratory incision, the different varieties of sarcoma of bone, and govern the extent of the operative procedure by the relative malignancy and extent of the tumor.

In this paper I shall discuss only the benign bone cysts of the long pipe bones, the dentigerous cysts of the jaw and the cystic adamantine epithelioma.

BENIGN BONE CYSTS.

The benign bone cysts of the long pipe bones are rare tumors. Up to the present time we have observed but 3 cases in the surgical clinic.

Case 1.—Bone cyst of the humerus. White girl, aged 7, tumor one year, pathologic fracture. Operation, curetting and drainage, June, 1904, ten months, well.[6] I saw this patient in August, 1903. The parents gave the following history:

History.—The apparently healthy child one year ago fractured the upper third of the humerus of the right arm after a slight fall. The fracture was treated by their family physician and united. After the dressing was removed a swelling was observed which has never disappeared. If the swelling had been present before the fracture, it had not attracted the attention of the parents or the physician who treated the fracture. For a year there were absolutely no symptoms except swelling. Three days ago, after a very slight fall, the child refused to use the arm because of pain, and for this reason was brought to the surgical clinic.

Examination.—On examination there was a fairly uniform expansion of the upper third of the humerus, easily seen, greatest toward the surgical neck. On palpation the soft parts were normal, but one could feel the normal shaft of the humerus expanding into a thin shell of bone. The surface of this shell of bone was not smooth like the normal shaft, but irregular. In a few places one could elicit definite parchment crepitation, first described by Dupuytren, or what I have called "ping-pong ball" crepitation. The arm was very tender.

Clinically, a diagnosis of bone cyst was suggested, because so far in my experience every sarcoma of the more malignant type in children at this age had caused death by internal metastasis within a year.

The only medullary tumors of the long pipe bones which, in their growth, expand the bone and produce a definite shell, are the bone cysts, the myxochondrosarcoma and the giant-cell sarcoma. Of the latter two we had no observations in the clinic, in patients at this age, and so far I have been able to find none in the literature. The Roentgen negative is illustrated in Figure 1.

Operation.—At the exploratory operation the tissues were normal until the periosteum was separated. The bone beneath was irregular and varied in thickness from 1 to 4 mm. On removing a piece of the shell of bone a cavity was exposed filled with blood; there was no connective tissue lining, and no evidence of cartilage, but as only sufficient bone was removed to allow curetting of the cavity, one can not exclude the possibility that cartilage was present in some part of the wall. After curetting, the cavity was partially packed with gauze, the remainder allowed to fill with blood-clot. Eight weeks after operation an *x*-ray picture demonstrated that the cavity was almost completely filled with new bone.

The origin of these bone cysts has been demonstrated by Virchow, Zeronie, Schlange, Koenig and others to be due to liquefaction of misplaced islands of epiphyseal cartilage, and in the majority of cases cartilage has been found in some parts of the wall.[7] In the two other cases observed in Dr. Halsted's clinic cartilage was demonstrated in the wall of the cyst.

Case 2.—Colored woman, aged 37. Expansion of the lower end of the right femur, four years.

History.—The swelling shown in Figure 2 reached its greatest height about one year after the onset, and during the last three years there has been little or no increase in size. This patient refused amputation. Five years and eight months later she returned to the clinic.

Examination.—The tumor had increased in size, but had not changed its characteristics. The shell of bone was rough, similar to Case 1, but thicker, and one could not elicit parchment crepitation. The *x*-ray showed a shadow somewhat similar to Case 1. The diagnosis lay between a bone cyst and a myxochondroma. The long duration and the preservation of the shell of bone excluded a malignant bone tumor.

Operation.—The findings at the operation by Dr. Follis, the resident surgeon, were similar to the case just discussed, except that cartilage was present within the shell of bone in many parts of the wall.

Case 3.—The age, clinical history, appearance and *x*-ray shadow were almost identical in this patient with Case 1, except that the first pathologic fracture had been five years instead of one year before the patient came under observation. The expansion of the upper two-thirds of the femur in this case was produced in the upper portion by cartilage, in the central portion by a cyst filled with blood, and in the lower portion by a fibromyxomatous connective tissue which extended down the medullary cavity of the femur some distance below the point of its expansion (Fig. 3).

Dr. Halsted exhibited this patient and the specimen at a recent meeting of the Johns Hopkins Hospital Medical Society. Later a detailed report, with the interesting histologic findings, will appear. The extensive formation of fibromyxomatous connective tissue histologically like ostitis fibrosa, described by von Recklinghausen, is, I think, a unique finding in both cysts.

Koch[8] gives the most complete résumé on the subject

6. Progressive Medicine, December, 1903, p. 191.

7. Progressive Medicine, December, 1899, p. 236.

8. Archiv f. klin. Chir., 1902, vol. lxviii, p. 976.

of bone cysts, collecting from the literature, in addition to his one observation, 22 cases.

Heineke[9] has recently published the first case of multiple bone cysts in which *x*-ray negatives were made. He is inclined to the conclusion that the cystic degeneration is part of a general osteomalacia. I have recently learned that Dr. Goldthwaite in Boston has under observation, confirmed by *x*-ray studies, a similar case of multiple bone cysts, in which there is no doubt clinically as to the presence of osteomalacia.

The etiology of these multiple cysts is apparently entirely different from the single cyst, but in every case numerous *x*-rays should be taken to exclude multiple cysts. Codman[10] in Boston reports a very interesting tumor in the digital phalanx which undoubtedly represents the cartilage stage of the benign bone cyst.

The benign cyst of the long pipe bones can not always be recognized clinically, nor does the *x*-ray negative differentiate it from medullary giant-cell sarcoma or the myxochondrosarcoma. As a rule, these three tumors can be distinguished from the more malignant and rapidly growing medullary sarcoma. However, if there is any doubt, one should never proceed with an amputation without excluding these tumors of less malignancy by an exploratory incision.

BENIGN DENTIGEROUS CYSTS.

Ten cases. Upper jaw, 4 cases; lower jaw, 4 cases; ethmoid, 2 cases. The age of the patients varied from 6 to 30 years; 4 were under 15 years of age, 6 between 20 and 30. The duration of the tumor varied from three months to thirteen years. Whether the tumor is situated in the upper or lower jaw, it is of slow growth and usually painless. There is a slow expansion of the jaw, and on palpation one can feel a smooth, thin shell of bone. Usually there is parchment crepitation. At the exploratory incision the periosteum is normal. The outer shell of bone is smooth; lining the bone there is a thin, vascular connective tissue membrane. The contents of the cyst is usually a blood-stained serum.

Microscopically, one finds frequently cholesterin crystals, blood corpuscles and degenerated cells, which suggest epithelium. Histologically, however, I have never been able to demonstrate an epithelial lining.

Usually the cyst is single; now and then there are thin partitions. In a few cases the cysts are multiple. Complete resection is unnecessary. Partial resection with curetting and drainage will accomplish a cure. In three of our cases a non-erupted tooth was found in a recess of the cyst. These dentigerous cysts are apparently due to the distension of the connective tissue capsule of a non-erupted tooth.

CASE 4.—Figure 4. The patient was a white boy, aged 15.

History.—The swelling of the body of the lower jaw was of three months' duration. Because of the painless and uniform expansion, the distinct shell of bone and parchment crepitation, I made the diagnosis of a dentigerous cyst.

Operation.—The exploratory incision revealed the pathologic findings already described. The outer expansion was cut away with the chisel without destroying the continuity of the lower jaw. The connective tissue membrane and tooth were removed. The bone cavity was then curetted, allowed to fill with a blood-clot and the skin incision closed. The wound healed *per primam*.

Result.—June, 1904, six years after operation, there is a slight depression in the jaw at the site of the scar, but no other deformity.

CASE 5.—Figure 5. The patient was a white girl, 8 years of age, the tumor of some years' duration.

Operation.—Complete resection was done. The child's hemoglobin was but 52 per cent. at the time of the operation, and although there was no loss of blood the patient died of shock. The tumor was a very large one and extended from the zygoma almost to the symphysis of the jaw. I believe incision and curetting would have been sufficient in this case.

CASE 6.—Figure 6. The patient was a colored girl, 19 years of age, the tumor of thirteen years' duration. Complete resection was performed. (Fig. 7.) The patient died at the end of the third week from abscess of the lung.

In the remaining five cases of dentigerous cysts, two of the upper jaw and three of the lower, the operation was similar to that followed in Case 4. The patients recovered and have remained well for from two to eight years since operation.

The two cases of cysts of the ethmoid bone presented themselves clinically with a tumor projecting from the angle between the nose and the supraorbital ridge, producing slight exophthalmos. On palpation the tumor was smooth and presented a thin shell bone giving parchment crepitation. In both, partial excision with curetting and drainage was performed. The patients have remained well, one four years and the other eighteen months since operation.

ADAMANTINE EPITHELIOMA.

Of these there were 12 cases. In 4 the tumor projected from the alveolar border of the jaw (3 lower, 1 upper). The tumor was covered with normal mucous membrane and did not invade the bone. In 8 cases the epithelial tumor was situated within the body of the jaw (1 upper and 7 lower), and in its growth produced an irregular expansion very similar to a dentigerous cyst. The age of onset varied from 18 to 61 years. The majority of cases were 20 and 35 years of age; the duration of the tumor from seven months to twenty-nine years, the majority from six to twenty years. In one case the condition was considered inoperable. (Fig. 8.) In the remaining 11 cases a complete resection of the diseased area was made. Nine cases have remained well for from one to twelve years. In one instance there was a local recurrence, but this patient has remained well eight years since the second operation. One patient (Fig. 9) died after complete excision of a huge tumor involving both upper jaws.

This epithelial tumor is apparently of a very low grade of malignancy. In none of our cases was there metastasis to the glands of the neck. The tumor can be differentiated from the more malignant neoplasms of the jaw by its very slow growth. The adamantine epithelioma involving the alveolar border can not always be differentiated clinically from the connective tissue epulis. The epulis is more apt to be associated with ulceration of the mucous membrane.

When the adamantine epithelioma originates in the body of the jaw and produces expansion, with the formation of a thin shell of bone, it can not be differentiated from a benign dentigerous cyst until the exploratory incision is made. Then, when the shell of bone is incised, we do not find a cavity, but a white, finely granular tumor containing connective tissue trabeculæ, and usually many small and large cystic cavities. The gross appearance is well illustrated in Figure 10. This patient (Fig. 11) was a colored man, 42 years of age, tumor of eight years' duration. The patient has remained well three years since operation.

The microscopic appearance is well illustrated in Figure 12.

9. Beiträge z. klin. Chir., 1903, vol. xl, p. 451.
10. Boston Med. and Surg. Journal, vol. cl, No. 8, p. 211, Feb. 25, 1904.

CASE 6.—Figure 13. The patient was a white woman, aged 52.

History.—Four years ago, when 48 years of age, she observed a tumor like a gumboil on the outer side of the alveolar border of the left lower jaw, opposite the canine and first molar teeth. At the end of two years, when it had reached the size of a hickory nut, it was removed. A local recurrence took place within six months.

Fig. 1.—Characteristic shadow thrown by any medullary tumor which in its growth produces a shell of bone. A pathologic fracture is also seen.

Fig. 2.—Bone cyst of lower end of femur of four years' duration.

Fig. 3.—Bone cyst of upper portion of femur. Dr. Halsted's case.

Examination.—The recurrent tumor is the size of an egg and involves the alveolar border of the left lower jaw from symphysis to within one centimeter of the angle. The tumor is present on both sides of the alveolar border. It is distinctly circumscribed. The mucous membrane at one point has ulcerated, exposing a small cyst.

Operation.—The tumor was removed by turning back flaps of mucous membrane which were not adherent to the tumor. Then the tumor and the alveolar border of the jaw were removed in one piece. The patient has remained well since the operation, a period of ten years.

Appearance of Tumor.—The fresh appearance was quite typical: white, friable, granular alveoli of various sizes and cysts in a definite fibrous stroma.

Fig. 4.—Sketch of reconstructed lower jaw in a case of dentigerous cyst. The expansion of the body, chiefly on the outer side, is well shown and the recess containing the non-erupted wisdom tooth.

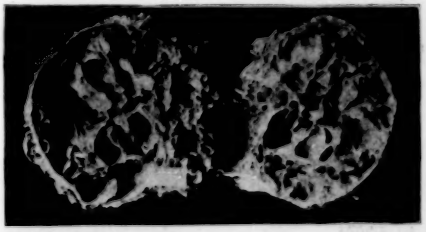

Fig. 5.—Photograph of the alcohol specimen of an excised lower jaw, in which the dentigerous cysts are multiple.

Fig. 6.—This illustrates the huge size which a dentigerous cyst of the upper jaw may reach.

Under the microscope (see Fig. 13) one sees the normal mucous membrane of the gum, then a zone of connective tissue, beneath which is the circumscribed tumor. The tumor is composed of branching epithelial alveoli in a connective tissue stroma. Some of the alveoli are cysts lined by the typical basal adamantine epithelium. Other alveoli are solid, with cells showing the various morphologic changes of the adamantine epithelium.

DISCUSSION.

DR. F. J. HALL, Kansas City, Mo.—It would be of interest to know what distinction, if any, Dr. Bloodgood makes between the cystic bone tumors of the long bones; in particular, two varieties of pathologic bone condition: one is the myeloma

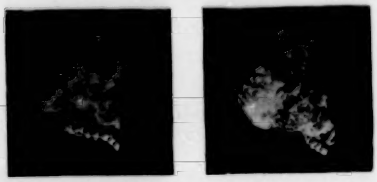

Fig. 7.—Photograph of the alcohol specimen of Figure 6 after removal.

Fig. 8.—Colored man, aged 54; tumor of twenty years' duration.

Fig. 9.—Dentigerous cyst of upper jaw. Death followed complete excision.

and the other is the traumatic myositis ossificans. Several cases of both these conditions have occurred in my own territory, and three of the cases of myeloma—so-called central sarcoma of the bone—have been operated on, and none has recurred. Three cases also of myositis ossificans have occurred wherein the central portions of the tumors were occupied by these cysts, and I should like to know if Dr. Bloodgood has had any experience with these other two varieties of conditions, and what relation they bear to the conditions which he has described.

DR. JOSEPH C. BLOODGOOD, Baltimore—I am inclined to think that what you mean by myeloma is a giant-cell tumor.

DR. HALL—Yes, sir.

DR. JOSEPH C. BLOODGOOD—Dr. Hall, in his question in regard to myeloma, undoubtedly means the medullary giant-cell sarcoma. This tumor is one of a relatively low grade of malignancy. We have observed about 10 cases; all have remained well since operation. I have reported them in the Johns Hopkins Hospital Bulletin for May, 1903. In regard to the question as to the origin of the blood cysts in the condition called

Fig. 10.—Photograph of resected lower jaw; *a*, large smooth-walled cyst; *b*, bony capsule; *c*, smaller cysts; *x*, friable, white, adamantine epithelial tissue; *t*, teeth and symphysis of jaw.

Fig. 11.—Patient from whom tumor shown in Figure 10 was removed.

myositis ossificans, they are probably due to hemorrhage. Recently there has appeared in the literature a number of interesting articles and reports of cases on this subject. These I have reviewed in *Progressive Medicine* for December, 1903. With or without a history of trauma an indurated mass associated with some pain and tenderness is observed by the patient in one of the large muscles, most frequently the thigh. The tumor rapidly becomes bony in hardness. In some cases the *x*-ray demonstrates a zone of normal tissue between the shaft of the bone and the osteoid tissue in the muscle. In other cases the two bony shadows are in contact. This has given rise to two views as to the etiology of the new bone

formation in the connective tissue between the muscle bundles. A number of authorities conclude that the bone is a product of detached pieces of periosteum, others that it rises from the connective tissue cells between the muscle bundles. Clinically the condition is not difficult to recognize, especially with the aid of the *x*-ray. However, when the new shadow rests directly on the shaft of the neighboring bone it will be difficult to differentiate the ossifying myositis from a condition called

Fig. 12.—Microphotograph of a section of an adamantine epithelioma, involving chiefly the alveolar border of the lower jaw. In this section the basal columnar cell and its various morphologic changes toward the center of the alveolus are well shown. (Sent me by Dr. Steensland.)

Fig. 13.—Microphotograph of a section of an adamantine epithelioma of the gum.

traumatic exostosis or ossifying periostitis. Blood cysts have been observed only in the ossifying myositis. Extensive operations are not necessary. One should remove as much of the new bone production as possible without destroying function. Slight local recurrences of the bone formation are to be expected. Fortunately the amount is never great, gives little or no discomfort, and second operations are rarely necessary. I do not think there is any relation between the hemorrhagic cysts observed in myositis ossificans and the cysts of the long pipe bones.

As to the question of the origin of the giant cells, recent investigation would indicate that the periosteal or medullary giant-cell tumor is probably an angioma or an angiosarcoma, and that the giant cells are due to budding of the endothelial cells of the vessels in these very vascular tumors. The most interesting publication on this subject is by Friedländer.* Further investigation, however, should be made of this most interesting tumor.

EXPERIMENTALLY PRODUCED GENUINE EPITHELIAL METAPLASIA IN THE STOMACH,

AND THE RELATIONS OF EPITHELIAL METAPLASIA TO CARCINOMA, AS DEMONSTRATED BY CASES REPORTED IN THE LITERATURE.

GUSTAV FÜTTERER, M.D.

CHICAGO.

As the observations on epithelial metaplasia to be reported in this paper were made in a series of experiments on the stomach of rabbits, undertaken for the purpose of studying the relations between mechanical irritation and development of carcinoma, I think it necessary to state this fact, merely to show under what circumstances the findings were made. My views concerning the rôle which mechanical irritations play in the etiology of carcinoma, and how those views have been formed, have been fully explained in former writings, and I can, therefore, refer the reader to them, in order to prevent repetitions, which would make this article too extensive.[1]

Some observations of importance have been made which I do not report, because they need corroboration, but they certainly encourage further efforts along the same lines.

In a series of experiments on the stomachs of 94 rabbits, a genuine epithelial metaplasia was found in five cases, only two of which will be described in detail, as a description of the others would cause an unnecessary repetition, for while the findings differ somewhat in all the cases, they are the same in principle. It may also be mentioned that I have specimens of epithelial metaplasia from a former experiment, bringing the total of cases to six.

In each case a piece of mucous membrane of the stomach was resected and hypodermic injections of a solution of pyrogallic acid were made, to reduce the percentage of hemoglobin, and thus prevent the healing of the defect, the edges of which were then exposed to friction by solid food. At first, as in former experiments, circular resections of mucous membrane around the pylorus were made, but the feeding of the animals was not carried out according to orders given, and they all died, postmortem examination revealing very much dilated stomachs filled with solid food, while only liquid food was to be given during the first four days. Not being able to get better care of the animals at the time, I had, in order to reduce the mortality, to resect pieces of mucous membrane near or further away from the pylorus, and later, when Dr W. H. English, to whom I am very much indebted, kindly took it on himself to supervise the keeping of the animals, my results became very much better.

* Archiv f. klin. Chir., 1902, vol. lxvii, p. 202.

1. Fütterer: Act. d. Carc., Bergmann, Wiesbaden, 1901, and The Journal A. M. A., March 15, 1902.

Fig 1.—Case 1. Hematoxylin-eosin stain. Bausch and Lomb, obj. 3 inches, magn. 30. V. Vegetable matter. P. 1, 2, 3, Peg of squamous epithelial cells. Rad. Root of the peg. Muc. Mucosa. Musc. m. Muscularis mucosæ Msc. Muscularis (hypertrophic). R. Rest of muscularis, not invaded by the peg. S. Serosa.

The microphotographs have been made by Dr. W. H. Knapp of Chicago, to whom I am very much indebted for the excellent work.

Fig. 2.—Case 1. Hematoxylin-eosin stain. Bausch and Lomb ocular 2, obj. ⅙ inch, magn. 250. In the middle of the field is found the part marked Red. (Fig. 11, with higher magnification. P. Fvg of squamous epithelial cells. Cyl. Dilated glands, with very high cylindrical epithelium.

METHOD OF OPERATING.

1. The skin over the region of the stomach was shaved.

2. Ether narcosis.

3. The skin was cut with a knife.

4. The muscles were held with pincers, and the abdomen was cut open with scissors.

5. Sterilized gauze was packed around the wound, the stomach was pulled out almost entirely, and gauze was packed all around it.

6. The stomach was opened with scissors on the anterior walls in the pyloric portion.

7. The contents of the stomach were removed with a teaspoon.

8. A part of the posterior wall of the stomach was pushed through the wound with the fingers.

9. The mucosa of this part was cut with scissors and a grooved director was introduced into the submucosa, loosening the mucosa plus the muscularis mucosa from its bed, and then the loosened piece was cut off with scissors.

10. Two catgut sutures, one uniting the mucosa and one the rest of the wall of the stomach, closed the anterior wound of the organ.

11. The stomach was allowed to fall back into the abdominal cavity, the gauze strips were removed, and the abdomen was closed by sutures.

12. The animals operated on received regular injections of 0.14 pyrogallic acid in solution hypodermically at different intervals, as they were needed to destroy hemoglobin. Hemoglobin examinations were made once a week, and all the animals were weighed.

On the whole, I must say that the results, so far as the production of certain forms of ulcers was concerned, were not entirely satisfactory, but I believe that the experience gathered will enable me in the near future to be more successful in this direction. The work to be reported here consists of a series of experiments conducted between Dec. 6, 1903, and April 2, 1904.

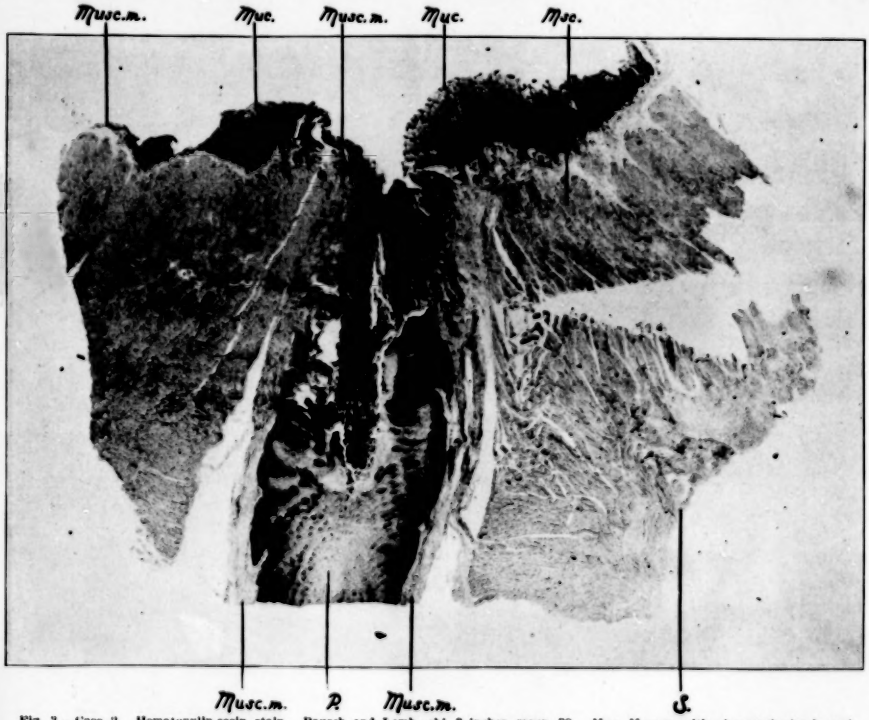

Fig. 3.—Case 2. Hematoxylin-eosin stain. Bausch and Lomb, obj. 3 inches, magn. 30. Muc. Mucosa with elongated glands and round-cell infiltration. Musc. m. Muscularis mucosæ. Msc. Muscularis (hypertrophic). S. Serosa. P. Peg of squamous epithelial cells.

REPORT OF THE FIVE CASES OF METAPLASIA.

The five cases of metaplasia recorded in our table have their principal features in regard to origin, the formation of pegs of squamous epithelium and their growth into the wall of the stomach in common, while there are some differences in the development and differentiation of the layers constituting the pegs.

CASE 1.—(Operation No. 32.)

Rabbit of white color; female, weighing 3½ pounds; hemoglobin, 85 per cent. Operation Jan. 8, 1904; died Feb. 1, 1904. January 23, hemoglobin, 60 per cent; weight, 2½ pounds. January 30, hemoglobin, 50 per cent.; weight 2⅛ pounds. One hypodermic injection of .14 pyrogallic acid in solution had been made.

In this case, as in Case 2, an infection of the right hand prevented me from performing the postmortem myself. When the stomach was handed to me, shortly after it had been removed from the animal's body, thickening and hardening of the part of the posterior wall of the stomach where the resection had been made, and where a regeneration of the mucosa had occurred, were recognized. In the midst of the regenerated portion could be seen a very small indentation and microscopic examination revealed here the presence of a peg of squamous epithelial cells, as is represented in Figure 1, with low power, and in Figure 2, showing its origin from the mucosa, with high power.

Microscopic Findings.—With low power an epithelial peg was seen, the upper end of which reached but slightly above the mucous membrane at both edges of the indentation, before mentioned. The epithelial peg had three branches, one in the upper layer of the muscularis propria, and the two others deep in the outer layers of the muscularis propria, through which the main part of the peg had almost penetrated and reached the serosa. The peg was isolated, on all sides surrounded by mucous membrane, and no similar formations were found anywhere. Only in one place was the peg firmly connected with

Fig. 4.—Case 2. Hematoxylin-eosin stain. Bausch and Lomb, ocular 2, obj. ⅙ inch. magn. 325. Gl. Glands of the mucosa. P. Peg of squamous epithelial cells. Cyl. Metaplasia. The cylindrical epithelium of the glands of the mucosa, changing into squamous epithelium. The nuclei contain a great deal of chromatin and the body of the cells becomes much longer. The glands themselves are dilated. It is of importance to notice that the epithelium lining the glands and undergoing metamorphosis shows perfectly regular arrangement, as under normal conditions, and it can easily be recognized that these cells are the regular columnar cells of the glands and not implanted skin cells, which would fill the lumen of the glands.

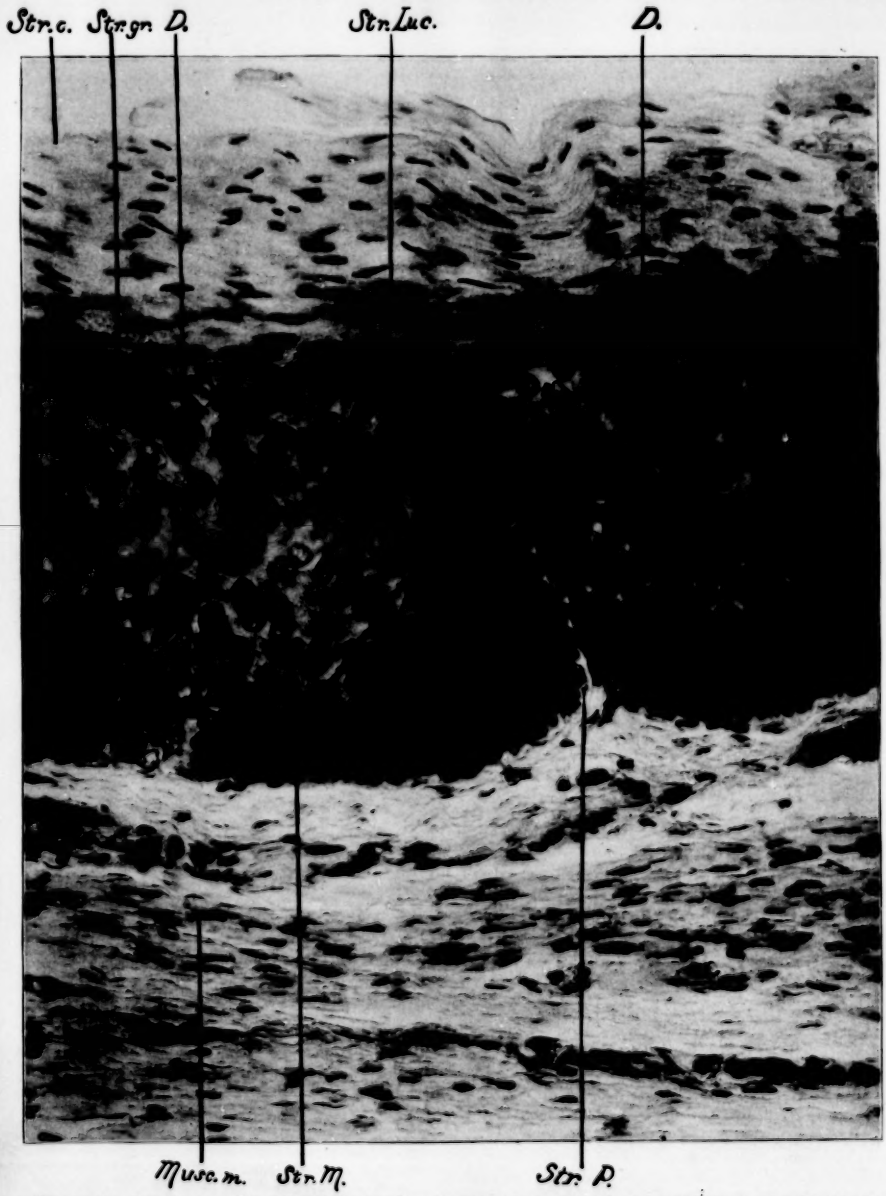

Fig. 5.—Case 3. This case was only mentioned, but not described in the text, because it was so similar to Case 1 that it was thought unnecessary. A section from this case was selected for microphotography, because it was thinner and better stained than those of the other case, which, however, showed the same findings. Str. c. Stratum corneum. Str. l. Stratum lucidum (only indicated). Str. gr. Stratum granulosum. D. Change of direction of the nuclei. Str. m. Stratum malpighii. Musc. m. Muscularis mucosæ. Str. p. Formation of a papilla.

the mucous membrane of the stomach, and this place has been marked rad., i. e., radix, presumably the root of the peg. The indentation was filled with vegetable matter, the muscularis propria was very much hypertrophied, and the peg itself had, with its ramifications, invaginated the hypertrophic muscularis mucosæ, pushing it almost clear through the muscularis propria, without breaking through it anywhere. The structure of the epithelial peg, which was not perfectly solid, resembled that of the skin in many ways, but there were some important microscopic differences to which attention will be called later.

Figure 5 shows well the resemblance of the structure of the walls of the peg to the layers of the normal skin. The specimen photographed has been taken from Case 3, not because Case 1 did not show the same structures, but because the sections happened to be thinner, and on account of this and their staining were more suited for microphotography.

Figure 5 shows: 1. A stratum malpighii with a dense layer of oval nuclei containing a great deal of chromatin, many karyokinetic figures and long cells, more or less at right angles to the longitudinal axis of the epithelial peg. Upward, the nuclei become more round and more pale, containing less chromatin, and then rather suddenly they appear more drawn out, more cylindrical, and as if drawn by a different current, they change their position, their longitudinal axis, rather suddenly, becoming parallel to the longitudinal axis of the peg itself, thus forming a well-differentiated stratum granulosum. In those three cases I have not been able to find prickle cells, which may be due to their absence or to the thickness of the celloidin sections, and to the fact that the cells of the stratum malpighii lie much more closely together than they do in the normal skin. 2. A papillary body is well developed. 3. The stratum granulosum shows a deeper hematoxylin stain than the upper parts of the stratum malpighii, and between this layer and the stratum corneum there are lighter portions, which seem to indicate a stratum lucidum, although I have not been able to convince myself that such a stratum really exists. 4. There is a sufficiently well differentiated stratum corneum, with considerable keratohyalin and with Gram's method small patches of hornification could be demonstrated in Case 1 and Case 3. In this case, as in the others, some striped muscular tissue was found in the parts of the muscularis of the stomach near to the epithelial peg.

After what has been said, it is clear that the epithelial peg described represents a formation of epidermis in the stomach, but the question arises whether this is really an epithelial metaplasia, or rather a development from an aberrant germinal deposit or an ingrowth of epidermis or an implantation.

As to a development from a germinal deposit, by looking at the question in general, it would seem as if such an origin can never be excluded, because if, for instance, a single squamous epithelial cell is found in a field that should only be lined with cylindrical cells, then this one cell may represent an embryologic deposit, and things would become more complicated, if more than one of such cells were present.

In this case the epithelial peg was found in the center of the regeneration filling the artificial defect. If there had been a germinal deposit, it would have been removed at the operation, and as the peg was absolutely isolated, no ingrowth from a possible germinal deposit at the edges of the artificial defect can have come into play. It may be said here that in Case 2. Figure 4 shows clearly the development of metaplasia from the columnar cells of the gland, and I consider those findings alone as conclusive. An ingrowth of epidermis is absolutely to be excluded, as there was no fistula in any of the cases, as the metaplasias were found in about the middle of the stomach, and as each one was perfectly isolated.

There remains the possibility of an implantation during the operation.

Against the possibility of an implantation the following reasons can be advanced:

1. The possibility of a successful transplantation of detached normal epithelial cells has never been demonstrated. I myself have made use of every occasion for many years to transplant normal epithelial cells, under most favorable conditions, in hundreds of cases, and neither I nor anyone else has ever observed a further development of the cells transplanted. If these were implantations, they would be the first successful cases of implantation of detached epithelial cells on record, and that would be a matter of great importance in view of the sudden downward growth of the transplanted cells.

2. The description of the method of operation employed in our experiments seems sufficient to show that an implantation of epidermis cells can not have taken place, and if it should have occurred it would have been under the most unfavorable circumstances. The cells would have been transferred to a bleeding surface, and been subjected to the mechanical influences of the food, the contractions of the stomach and digestive influences of the gastric juice. If cells transplanted under most favorable conditions do not thrive, how can they develop under such most unfavorable conditions? I have often tried to transplant epidermis cells into the submucosa of the stomach, but have never been successful.

3. Sixty-nine of the animals operated on died during the first week after the operation, and as no microscopic examinations of their stomachs were made, we have five metaplasias out of 25 cases, which would be a very high percentage, indeed, for implantation.

4. It has been mentioned that the development of the layers forming the pegs differed very much, and that would not be the case in implantations.

5. Figure 2 and Figure 4 show plainly the development of the pegs from the epithelium of the glands which, particularly in Figure 5, shows its normal arrangement along the walls of the gland, without any disorder in position. If an implantation had occurred, the implanted cells could never show such an arrangement, but they would fill the lumen of the glands. I have specimens of an implantation into the glands of the mucosa of the stomach from a carcinoma of the esophagus, and that gives entirely different findings.

6. Hornification is only found in very small spots. An implantation would very probably show more of it.

7. But very few prickle cells have been observed. Many specimens were examined before a few were found. An implantation would have furnished more of them.

8. In the unstained specimens no pigment was seen.

9. If an implantation of skin had occurred, the vigorous down-growth from the very start of the development of the pegs, occurring in every case, would very much need an explanation.

Case 2.—(Operation No. 27.)

Rabbit; female, brown, weight and hemoglobin at time of operation not recorded. Operation Jan. 7, 1904; died Feb. 19, 1904.

	Per cent.	Weight.
January 23, hemoglobin.....	45	3¼ pounds.
January 30, hemoglobin.....	38	3¼ pounds.
February 6, hemoglobin.....	45	3¼ pounds.
February 13, hemoglobin.....	38	3¼ pounds.

During the last six days no weight has been recorded, and it can not, therefore, be stated whether any loss of weight occurred during this period.

When the freshly removed stomach was handed to me I saw

a strand 7 mm. long that had been cut off from its continuation. The strand was round, had a diameter of 4 mm., was of rather firm consistency, and was filled with a whitish mass. At a point corresponding to the insertion of the strand into the wall of the stomach, toward the middle of the organ, on its posterior side, a prominent and hardened portion of the mucosa was found on the inside of the organ, which represented a healed defect, Figure 3. The strand was cut off close to the stomach, for imbedding and cross-sectioning, but was lost, and, of course, I have no idea where its continuation in the animal may have ended.

The examination of the stomach specimens revealed another metaplasia very similar to the one described, but much more developed. A large epithelial peg had pressed the muscularis mucosæ through the greater part of the muscularis propria, and the former and the outer layers of the latter, plus serosa, had, no doubt, formed the walls of the hollow strand that was filled with squamous epithelial cells. Figure 3 shows the peg on its way through the hypertrophic muscularis, and Figure 4 demonstrates beautifully the metaplasia of the columnar epithelial cells of the glands, and I consider those findings alone sufficient proof against an implantation.

Microscopic Findings.—The development of the epidermoidal layers does not show nearly the same differentiation as in Case 1, yet a papillary body, a stratum malpighii, and a stratum corneum are sufficiently well developed.

Case 3 is very much like Case 1, and Cases 4 and 5 are more like Case 2.

In Case 4 a strand was again found coming from the stomach, and here I saw it end between two lobes of the liver. The strand ended blind, and at its end fine adhesions connected it with the liver capsule. The walls of the strand were formed by muscularis mucosæ, the outer layers of the muscularis propria and the serosa, to its very end, and the epithelial cells had not broken through them anywhere.

Concerning my conception of the changes found in all five cases, I would say:

1. All five cases represent genuine epithelial metaplasias, as an ingrowth, an implantation, and a development from a germinal deposit can be excluded. There was no fistula in any of the cases

2. In all the cases the metaplasia has at once been followed by a down-growth.

3. This down-growth has occurred under considerable growth pressure, as shown by the invagination of the muscularis mucosæ through the greater part of the hypertrophic muscularis propria, and the invagination of the rest of that layer for quite a distance outside of the organ.

4. The metaplasia has been followed by what we may call a practically unlimited proliferation of the squamous cells.

5. Such a down-growth and such an unlimited proliferation of cells are two principal characteristics of carcinoma.

6. We can here use the term metaplasia only for the metamorphosis of the columnar to the squamous cells, for there is no more metaplasia going on in the pegs, the products of metaplasia. I would just speak of atypical pegs in an abnormal position.

7. The epithelial cells have nowhere broken through the muscularis mucosa, and the most characteristic peculiarity of carcinoma, the ingrowth into connective tissue, is absent.

8. What would have become of the strands, filled to the very end with squamous epithelial cells, if the animals had lived longer, can not be said and only further experiments can show it.

9. These are the first cases of epithelial metaplasia, produced by experiment, on record, if we except a metaplasia in the bladder, which Lubarsch mentions, without describing it. *It is to be remembered that structures considered to be characteristic of the ectoderm have been produced from entodermal tissues, a fact which would make it impossible to uphold a sharp division of the germinal layers.*

LITERATURE ON EPITHELIAL METAPLASIA.

In the human being a great many cases of epithelial metaplasia have been described and their careful reading offers a great deal of material for reflection. Particularly the close relation of epithelial metaplasia to carcinoma is strongly emphasized by the observations recorded.

Eye.—In the eye, Michel[1] and Leber[2] have seen metaplasia of the cylindrical epithelium of the conjunctiva, in connection with chronic conjunctivitis, and in the nose and its accessory cavities, and in the ear metaplasias are found with relative frequency, but they are mostly of a superficial character. In reference to the metaplasias of the nose, the writings of Suchanek, Schuchard, Habermann, Bungner, Kahn and Zernike will be mentioned.

Nose.—Suchanek[4] found transitional epithelium and squamous epithelium in the secretions from acute rhinitis and influenza-rhinitis, which, according to his opinion, did not come from the bottom of the nasal cavity, or from the introitus nasium, but from different parts of the regio respiratoria, and even from the regio olfactoria. In all of these parts, according to Suchanek, patches of epithelial metaplasias are sometimes found in connection with chronic catarrh, and irritations as they occur with different industries.

Accessory Sinuses.—Schuchard[5] points out the remarkable peculiarity of the mucous membrane of the antrum of Highmore to form squamous epithelium under the influence of catarrhal conditions. He also mentions that a hydrops of the antrum of Highmore can lead to the formation of steatomata or butter cysts, and that both probably owe their origin to metaplastic changes of the epithelium.

Habermann[7] describes a cholesteatoma of the right frontal sinus. The patient had a fistula under the right eyebrow, from which pus had been discharged for about nine months, and Habermann believes that an ingrowth of epidermis through this fistula into the frontal sinus had occurred.

Bungner[7] saw a benign, hard papilloma in the upper portion of the nasal cavity. The papilloma showed hornification and had developed from psoriasis nasi of the mucous membrane of the septum. There was also ozena, which had existed since puberty.

Kahn[8] mentions a hard papilloma which was covered with an immense layer of stratified squamous epithelium. The surrounding mucous membrane had not been examined.

Zernike[9] examined a fibroma of the nasopharyngeal cavity, which was covered partly with cylindrical epithelium, partly with squamous epithelium, and between both kinds a transitional epithelium was present.

Ear.—In the ear Voltolini[10] found large squamous epithelia in the contents of the drum cavity, in 14 cases. Lucae believes that purulent inflammation of the middle ear may, through the formation of granulations, lead to a formation and desquamation of epidermis.

Knapp[11] and Habermann[12] report cases of cholesteatoma. The case of the latter author was accompanied by a purulent inflammation of the middle ear and perforation of the drum, so that there was probably an ingrowth through the perforation rather than a metaplasia.

Zeroni[13] saw cholesteatoma in a polypus of the ear, and Kessel and Steudener[14] have described large epithelial pegs in polypi of the ear, without reporting anything positive about their origin. The publications of Habrecht,[3] Bezold,[3] Siebenmann[13] and Schwartze[14] have not been at my disposal.

There are a number of communications to be found in literature relating to metaplastic conditions in the larynx, in the trachea and in the bronchial tubes and lungs.

Larynx.—Virchow[15] describing epidermoidal changes of the parts of the larynx which are lined with squamous epithelium, called this condition pachydermia laryngis, and Posner and Fraenkel[16] also published similar observations.

Heymann[17] thinks that epithelial metaplasia of the larynx occurs in places which, during the functions of the larynx, are most exposed to mechanical irritation, and Haycroft and Carlier[18] think that the transitional and stratified squamous epithelium present in the adult trachea are produced from a fully differentiated ciliated membrane through friction.

Kanthak[19] says: "We see, therefore, first, that after chronic irritation a general epidermoidal metamorphosis may be found over the whole larynx. Second, that only some parts of the mucous membrane of the larynx may be affected. Third, that transitional forms from cylindrical squamous epithelium, as described by Heymann,[17] are only the initial stages of metaplasia. Fourth, that ulceration favors such metamorphosis, and, fifth, that the most pegs and more formation of papillæ are found in the older and more developed cases, and that in these cases the pegs may either be regular or irregular and atypical. In the latter case it has come to the development of a pachydermia diffusa." Referring to the length of the epithelial pegs, Kanthak[19] says: "The epidermoidal metamorphosis can go so far that a genuine pachydermia may be observed, with the development of strong papillæ and epithelial pegs, which often grow downward just as we are used to seeing it in the skin."

Bergengrün[20] describes a case of verruca dura laryngis, in which, following a chronic catarrh, he saw several white nodular tumors on the inside of the posterior wall of the larynx, the surface of which showed epidermoidal character, with hornification.

Trachea and Bronchi.—In a primary carcinoma of the trachea, which had its seat at the bifurcation, the microscopic examination showed that this primary growth was squamous epithelioma, while the neighboring mucous membrane and its mucous gland were lined with an unchanged cylindrical epithelium. There was a metastasis in the left suprarenal capsule, which also consisted of squamous epithelium. Virchow,[15] in speaking of the carcinomata of the bronchi, says: "They are pure bronchial carcinomata, and they mostly have the peculiarity to belong to the cancroids, as they have

REPORT ON EXPERIMENTS PERFORMED BETWEEN DECEMBER 6, 1903, AND APRIL 2, 1904.

No.	Date of Operation	Animal	Color	Sex	Weight, lbs.	Hemoglobin Per cent.	Date of Death	Postmortem	Last Wgt. Recorded in lbs.	Last Hemoglobin Recorded, Per cent.	Macroscopic Findings	Microscopic Findings.
1	Dec. 6, 1903.	rabbit	not given	...	3¼	82	Dec. 7.	1	Dec. 6. 3¼	Dec. 6. 82.	Dilated stomach filled with food	. . . . .
2	Dec. 1903.	rabbit	not given	...	2¾	78	Dec. 8.	1	Dec. 6. 2¾	Dec. 6. 78.	Dilated stomach filled with food	. . . . .
3	Dec. 20, 1903.	rabbit	black	f.	3¾	82	Dec. 21.	1	Dec. 20. 3¾	Dec. 20. 82.	Dilated stomach filled with food	. . . . .
4	Dec. 20, 1903.	rabbit	black	f.	4½	89	Dec. 21.	1	Dec. 20. 4½	Dec. 20. 89.	Dilated stomach filled with food	. . . . .
5	Dec. 20, 1903.	rabbit	brown	m.	5	86	Dec. 21.	1	Dec. 21. 5	Dec. 21. 86.	Dilated stomach filled with food	. . . . .
6	Dec. 20, 1903.	rabbit	white	f.	4¾	82	Dec. 20.	1	Dec. 20. 4¾	Dec. 20. 82.	Dilated stomach filled with food	. . . . .
7	Dec. 25, 1903.	B. hare	brown	f.	5	85	Dec. 25.	1	Dec. 25. 5	Dec. 25. 85.	Dilated stomach filled with food	. . . . .
8	Dec. 25, 1903.	B. hare	brown	f.	4½	86	Dec. 25.	1	Dec. 25. 4½	Dec. 25. 86.	Dilated stomach filled with food	. . . . .
9	Dec. 25, 1903.	rabbit	brown	f.	4¾	97	Dec. 26.		Dec. 25. 4¾	Dec. 25. 97.		. . . . .
10	Dec. 25, 1903.	rabbit	brown	m.	4¾	83	Dec. 26.		Dec. 25. 4¾	Dec. 25. 83.		. . . . .
11	Dec. 27, 1903.	rabbit	brown	f.	4¾	86	Dec. 28.		Dec. 27. 4¾	Dec. 27. 86.		. . . . .
12	Dec. 27, 1903.	rabbit	brown	f.	6¾	79	Dec. 28.		Dec. 27. 6¾	Dec. 27. 79.		. . . . .
13	Dec. 27, 1903.	rabbit	brown	m.	6	92	Dec. 28.		Dec. 27. 6	Dec. 27. 92.		. . . . .
14	Dec. 27, 1903.	rabbit	brown	m.	4¾	82	Dec. 29.		Dec. 27. 4¾	Dec. 27. 82.		. . . . .
15	Dec. 27, 1903.	rabbit	brown	f.	4¾	82	Jan. 1.		Dec. 30. 4¾	Dec. 30. 82.		. . . . .
16	Dec. 27, 1903.	rabbit	brown and white	m.	4¾	86	?		Dec. 27. 4¾	Dec. 27. 86.		. . . . .
17	Dec. 27, 1903.	rabbit	black and white	f.	5¾	83	Feb. 10.	1	Feb. 6. 5¾	Feb. 6. 83.	Ulcer	Purul. infil't edges of ulcer.
18	Dec. 27, 1903.	rabbit	black and white	m.	4¾	79	Mar. 29		Mar. 28. 4	Mar. 28. 65.		. . . . .
19	Dec. 27, 1903.	rabbit	brown and white	f.	4¾	83	Feb. 2.		Jan. 30. 3¾	Jan. 30. 55.		. . . . .
20	Dec. 31, 1903.	rabbit	white	f.	3¾	70	Dec. 31.		Dec. 31. 2¾	Dec. 31. 70.		. . . . .
21	Jan. 1, 1904.	rabbit	white	f.	4¼	90	Mar. 16	1	Mar. 12. 2½	Mar. 12. 92.	Healed defect.	Metaplasia
22	Jan. 1, 1904.	rabbit	brown	m.	5¾	70	Jan. 6.	1	Jan. 1. 2½	Jan. 1. 52.	Ulcer	. . . . .
23	Jan. 1, 1904.	rabbit	brown	m.	4	84	Feb. 8.	1	Feb. 6. 2¾	Feb. 6. ?		. . . . .
24	Jan. 1, 1904.	rabbit	brown	f.	3¾	84	Jan. 2.		Jan. 1. 3¾	Jan. 1. 84.		. . . . .
25	Jan. 1, 1904.	rabbit	brown	f.	2¾	78	Jan. 2.		Jan. 1. 2¾	Jan. 1. 78.		. . . . .
26	Jan. 1, 1904.	rabbit	white	m.	4½	83	Jan. 8.		Jan. 7. 4½	Jan. 7. 83.		. . . . .
27	Jan. 1, 1904.	rabbit	brown	f.			Feb. 19.	1	Feb. 13. 3¾	Feb. 13. 38.	Healed defect.	Metaplasia
28	Jan. 1, 1904.	rabbit	brown	f.	5	90	Apr. 30.	1	Apr. 10. 3	Apr. 10. 55.	Ulcer	. . . . .
29	Jan. 1, 1904.	rabbit	brown	f.	5	76	Jan. 8.		Jan. 8.		Ulcer	. . . . .
30	Jan. 1, 1904.	rabbit	brown and white	m.	3¾	83	Jan. 14.	1	Jan. 8. 3¾	Jan. 8. 83.	Ulcer with perforation peritonitis	. . . . .
31	Jan. 8, 1904.	rabbit	white	f.	4¾	80	Feb. 15.	?	Feb. 6. 4¾	Feb. 6. 60.	?	?
32	Jan. 8, 1904.	rabbit	white	f.	3½	85	Feb. 1.	1	Jan. 30. 2¾	Jan. 30. 50.	(*)	Metaplasia
33	Jan. 8, 1904.	rabbit	white	f.	3¾	94	Jan. 21.	1	Jan. 8. 3¾	Jan. 8. 85.	Ulcer	. . . . .
34	Jan. 8, 1904.	rabbit	brown and white	f.	4½	85	Jan. 13.	1	Jan. 8. 4¼	Jan. 8. 85.	Two ulcers	. . . . .
35	Jan. 8, 1904.	rabbit	gray and white.	m.	4½	90	Jan. 9.		Jan. 8. 4½	Jan. 8. 90.		. . . . .
36	Jan. 10, 1904.	B. hare	brown	m.	5½	81	Jan. 11.		Jan. 10. 5½	Jan. 10. 81.		. . . . .
37	Jan. 10, 1904.	B. hare	brown	f.	5¾	80	Jan. 10.		Jan. 10. 5¼	Jan. 10. 80.		. . . . .
38	Jan. 10, 1904.	B. hare	brown	f.	3¾	76	†Jan.10		Jan. 10. 5¾	Jan. 10. 76.		. . . . .
39	Jan. 10, 1904.	B. hare	brown	m.	4½	76	Jan. 11.		Jan. 10. 4½	Jan. 10. 76.		. . . . .
40	Jan. 10, 1904.	B. hare	brown	f.	4½	72	Jan. 11.		Jan. 10. 4½	Jan. 10. 72.		. . . . .
41	Jan. 10, 1904.	rabbit	gray and white.	f.	3¾	69	Jan. 17.	1	Jan. 10. 3¾	Jan. 10. 69.	Ulcer with hemorrhage.	Purulent infiltration of [edges.
42	Jan. 10, 1904.	rabbit	white	f.	3¾	77	Jan. 13.	1	Jan. 10. 3¾	Jan. 10. 77.	Ulcer	. . . . .
43	Jan. 10, 1904.	B. hare	brown	f.	4	75	Jan. 13.	1	Jan. 10. 4	Jan. 10. 75.	Ulcer	. . . . .
44	Jan. 10, 1904.	rabbit	gray	f.			Jan. 10.					. . . . .
45	Jan. 10, 1904.	rabbit	black	f.	3	68	Jan. 11.		Jan. 10. 3	Jan. 10. 68.		. . . . .
46	Jan. 10, 1904.	rabbit	gray and white.	f.	3	74	Jan. 25.	1	Jan. 25. 2¾	Jan. 25. 72.	Ulcer	. . . . .
47	Jan. 10, 1904.	rabbit	white	f.	3	75	Jan. 10.		Jan. 10. 3	Jan. 10. 75.		. . . . .
48	Jan. 10, 1904.	rabbit	white	f.	3	87	Feb. 9.	1	Jan. 6. 2¾	Jan. 6. 60.	Ulcer	Purulent infiltration of [edges.
49	Jan. 10, 1904.	rabbit	white	f.	3¾	68	†Jan. 0		Jan. 10. 3¾	Jan. 10. 68.		. . . . .
50	Jan. 12, 1904.	B. hare	white	f.	3¾	82	Jan. 13.		Jan. 12. 3¾	Jan. 12. 82.		. . . . .
51	Jan. 12, 1904.	B. hare	brown	f.	3½	82	Jan. 13.		Jan. 12. 3½	Jan. 12. 82.		. . . . .
52	Jan. 12, 1904.	B. hare	brown	f.	3¼	79	Jan. 13.		Jan. 12. 3¼	Jan. 12. 79.		. . . . .
53	Jan. 12, 1904.	B. hare	brown	f.	3½	84	Jan. 13.		Jan. 12. 3½	Jan. 12. 84.		. . . . .
54	Jan. 12, 1904.	B. hare	black and white	f.	4	68	Jan. 14.		Jan. 12. 4	Jan. 12. 68.		. . . . .
55	Jan. 12, 1904.	B. hare	white	f.	4	85	Jan. 14.		Jan. 12. 4	Jan. 12. 85.		. . . . .
56	Jan. 17, 1904.	B. hare	gray	f.	6	86	Jan. 18.		Jan. 17. 6	Jan. 17. 86.		. . . . .
57	Jan. 17, 1904.	B. hare	brown	f.	5½	82	Jan. 18.		Jan. 17. 5½	Jan. 17. 82.		. . . . .
58	Jan. 17, 1904.	B. hare	brown	f.	4¼	78	Jan. 18.		Jan. 17. 4¼	Jan. 17. 78.		. . . . .
59	Jan. 17, 1904.	B. hare	brown	f.	6¼	85	Jan. 18.		Jan. 17. 6¼	Jan. 17. 85.		. . . . .
60	Jan. 17, 1904.	B. hare	brown	f.	5¾	81	Feb. 10.	1	Feb. 6. 3¾	Feb. 6. 50.	Ulcer	. . . . .
61	Jan. 17, 1904.	B. hare	brown	f.	5	82	Jan. 18.		Jan. 17. 5	Jan. 17. 82.		. . . . .
62	Jan. 17, 1904.	B. hare	brown	f.	6	82	Jan. 18.		Jan. 17. 6	Jan. 17. 82.		. . . . .
63	Jan. 17, 1904.	B. hare	brown	m.	4¾	76	Jan. 18.		Jan. 17. 4¾	Jan. 17. 76.		. . . . .
64	Jan. 17, 1904.	B. hare	brown	m.	5¼	84	Jan. 18.		Jan. 17. 5¼	Jan. 17. 84.		. . . . .
65	Jan. 17, 1904.	B. hare	brown	f.	4¾	88	Jan. 18.	1	Jan. 17. 4¾	Jan. 17. 88.	Ulcer	. . . . .
66	Jan. 17, 1904.	B. hare	brown	m.	3¾	76	Jan. 18.		Jan. 17. 3¾	Jan. 17. 76.		. . . . .
67	Jan. 17, 1904.	B. hare	brown	f.	3¾	80	Jan. 18.		Jan. 17. 3¾	Jan. 17. 80.		. . . . .
68	Feb. 21, 1904.	rabbit	brown	f.	5	83	May 12.	1	Apr. 10. 3¾	Apr. 10. 55.		Metaplasia
69	Feb. 21, 1904.	rabbit	gray	f.	4¾	90	Feb. 28.	1	Feb. 28. 3½	Feb. 28. 25.	Ulcer with perforation	. . . . .
70	Feb. 21, 1904.	rabbit	brown	m.	4¾	75	Feb. 24.		Feb. 21. 4¾	Feb. 21. 65.		. . . . .
71	Feb. 21, 1904.	rabbit	brown	m.	4¼	88	Mar. 21	1	Mar. 19. 2¾	Mar. 19. 41.		. . . . .
72	Feb. 21, 1904.	rabbit	brown	m.	4½	85	Mar. 30		Mar. 28. 4¼	Mar. 28. 73.		. . . . .
73	Feb. 21, 1904.	rabbit	white	f.	4¾	80	Feb. 22.		Feb. 21. 4¾	Feb. 21. 80.		. . . . .
74	Feb. 21, 1904.	rabbit	black	f.	3¾	70	Mar. 16	1	Mar. 12. 2¾	Mar. 12. 45.		. . . . .
75	Feb. 21, 1904.	rabbit	gray and white.	f.		70	†Feb.21			Feb. 22. 70.		. . . . .
76	Feb. 21, 1904.	rabbit	brown and white	f.	4¾	65	Feb. 22.		Feb. 22. 4¾	Feb. 22. 65.		. . . . .
77	Feb. 21, 1904.	rabbit	black and white	f.	3¾	65	Feb. 22.		Feb. 22. 3¾	Feb. 22. 65.		. . . . .
78	Feb. 21, 1904.	rabbit	white and yellow	m.	4¾	65	Feb. 24.		Feb. 22. 4¾	Feb. 22. 65.		. . . . .
79	Feb. 21, 1904.	rabbit	white and yellow	f.	4½	70	Feb. 24.		Feb. 22. 4½	Feb. 22. 70.		. . . . .
80	Feb. 27, 1904.	rabbit	brown and gray	m.	4	85	Mar. 13.		Mar. 6. 4	Mar. 6. 81.		. . . . .
81	Feb. 27, 1904.	rabbit	gray and brown	f.	4½	90	May 9.	1	Apr. 10. 3¾	Apr. 10. 53.		Metaplasia
82	Feb. 27, 1904.	rabbit	brown	...		72	†Feb.27			Feb. 27. 72.	One	. . . . .
83	Feb. 27, 1904.	rabbit	brown	m.	3½	90	Mar. 5.	1	Feb. 27. 3½	Feb. 27. 50.	Ulcer with perforation	. . . . .
84	Feb. 27, 1904.	rabbit	brown	f.	4¼	93	Mar. 23	1	Mar. 19. 3¾	Mar. 19. 50.	Ulcer	. . . . .
85	Feb. 27, 1904.	rabbit	white	f.	3½	92	Apr. 9.	1	Apr. 2. 2¾	Apr. 2. 46.	Ulcer	. . . . .
86	Mar. 6, 1904.	rabbit	brown and white	f.	5¾	70	Mar. 8.		Mar. 6. 5½	Mar. 6. 70.		. . . . .
87	Mar. 6. 1904.	rabbit	brown	m.	3½	95	Mar. 9.		Mar. 6. 3½	Mar. 6. 95.		. . . . .
88	Mar. 6, 1904.	rabbit	gray-brown	m.	3¾	78	Mar. 8.		Mar. 6. 3¼	Mar. 6. 78.		. . . . .
89	Mar. 6, 1904.	rabbit	gray and white.	m.	3¾	85	Mar. 12.		Mar. 6. 3¾	Mar. 6. 85.		. . . . .
90	Mar. 6, 1904.	rabbit	brown	f.	4¾	70	Mar. 30	1	Mar. 12. 3½	Mar. 12. 40.	Ulcer	. . . . .
91	Mar. 6, 1904.	rabbit	brown	m.	3½	90	Mar. 7.		Mar. 6.	Mar. 6. 90.		. . . . .
92	Apr. 2, 1904.	rabbit	black and white	?	4¼	75	Apr. 4.		Apr. 2. 4¼	Apr. 4. 75.		. . . . .
93	Apr. 2, 1904.	rabbit	?	?	5¾	80	Apr. 4.		Apr. 2. 5¾	Apr. 2. 80.		. . . . .
94	Apr. 2, 1904.	rabbit	?	?	3¾	65	May 18.		Apr. 10. 3¾	Apr. 10. 65.		. . . . .

* Healed defect; but in its place a thickened and hardened mucosa. † Death from ether.

Number of cases, 94; deaths, 94; death during the first week after operation, 69; postmortems, 35; ulcers, 20; healed defects, 3; hemorrhages, 1; perforations, 3; peritonitis, 1; microscopic examinations, 8; metaplasias, 5; purulent infiltration of the edges of ulcers, 3; purulent infiltration of the edges of the ulcers with liver abscess, 2; death from ether, 6; deducting 69 cases that died during the first week, and in which no examination of the stomach was made, we have 5 metaplasias out of 25 cases.

a strongly developed squamous epithelium, which does not occur in the bronchi; they show about the same structure as the carcinomata of the vocal ligament or those of the lips." Virchow observed a pure bronchial carcinoma which had developed from a bronchus of the first order, and which had grown into the lumen, filling and obstructing it completely. It was interesting to see that a kind of dissemination had occurred in the lower bronchi, where a number of small eruptions had occurred.

In the case described by Friedländer,[25] a cancroid, according to his opinion, had developed from tubercular ulcers of the bronchus, the metaplastic and hornified squamous epithelium of which had grown into a lung cavity. Siegert[27] found a papilloma in the lower air passages which was covered with squamous epithelia, with prickles; it contained epithelial pegs and epithelial pearls, and was surrounded by a cylindrical epithelium. Chiari[28] also describes a primary bronchial carcinoma, with hornification, which, according to him, had developed from a germinal deposit. A squamous epitheloma of the bronchus of the upper lobe of the left lung at its junction with the main bronchus is reported by Ernst.[29] There were multiple metastases of similar structure in the dura mater of the cerebrum and cerebellum, and there was also, as in the case of Bergengrün,[30] a metastasis in the left suprarenal capsule. Cases of squamous epithelioma of the lung have been reported by: Siegert,[27] 1 of which had a cancer cavity; Perls,[31] 1 case; Grünwald,[32] 1 case, according to him originating from the alveolar epithelium, and Wolf,[33] 1 case, developing from the lung and the bronchi, and another one growing in a cavity.

The writings of Ohlof,[34] Teschendorf,[35] Griffini,[36] Fuchs,[37] Japha,[38] Wechselmann,[39] Tillmann,[40] Stumpf[41] and Werner,[42] in which more such cases have been reported, have not been at my disposal.[43]

Pharynx.—In reference to hornification of epithelium in Waldeyer's adenoid ring of the pharynx, Siebenmann[44] says: "The tendency to proliferation and hornification of the epithelium is found in a pronounced way not only in the adenoid ring itself, but also in the mucous membrane in the vicinity. It develops either in a benign typical way or atypical, as carcinoma, which is often observed in this locality."

Tonsils.—On the tonsils, Wex[45] found hornified epithelium covering the gland of a child 5 years old.

Intestinal Tract.—In the stomach, physiologic hornification is found in some lower mammalia, edentata, who have no teeth or only rudimentary teeth, and have to break up hard calcareous material in the stomach.

Leydig found physiologic hornification of the mucosa of the stomach in echidna, halmaturus and bradypus, and has also found in the placentalia, and Hunter[46] found hornification in the pars cardiaca and pars pylorica of manis.

Borst[47] has observed squamous epithelioma in the stomach, the microscopic structure of which is shown in his work on tumors, but a description I have not been able to find.

Bohm[48] found squamous epithelium and squamous epithelioma in the rectum, but he himself is of the opinion that an ingrowth had taken place. Those are all the reports concerning metaplasia in the gastrointestinal tract which I have been able to find in literature, and we can therefore say that so far no pathologic epithelial metaplasias have been seen here.

Gall Bladder.—In the gall bladder, Lubarsch[49] found an epithelial metaplasia in the form of an excrescence of the size of a lentil. The proliferation showed the picture of a condyloma acuminatum, and was surrounded by hornifying and hornified squamous epithelium. There were present a chronic cholecystitis, four gallstones and a hydrops of the gall bladder.

Mönkeberg[50] found a cancroid combined with adenocarcinoma of the gall bladder. Israel[51] reports four cases of squamous epithelioma of the gall bladder, which all had made metastases, consisting of squamous epithelium.

Pollak[52] saw two cases of squamous epithelioma of the gall bladder and Nehrkorn[53] one, with hornified metastasis in the lymphatic glands.

Hansemann[54] illustrates a case without giving a description, and the reports of Rhein,[55] Weber[56] and Ohlof[57] were not accessible to me.

Dr. Arthur Dean Bevan has observed a case of adenocarcinoma with metaplasia. The case has not yet been published, but Dr. Bevan had the kindness to acquaint me with its details, and to permit me to mention it.

A farmer, aged 52, married, was admitted to the Presbyterian Hospital of Chicago, Dec. 15, 1903, and dismissed on Jan. 3, 1904. There were symptoms of gallstones with gastric disturbances, dizziness and vomiting; attacks of violent pain in the gall bladder. The patient had lost twenty pounds during the last month preceding the operation, which was performed by Dr. Bevan on Dec. 23, 1903. The gall bladder was surrounded by adhesions and contained pus and gallstones. Scrapings from the gall bladder showed microscopically partly the picture of an adenocarcinoma and partly that of a squamous epithelioma.

Urinary Tract.—Rokitansky[58] was the first to describe cholesteatomatous changes in the urinary tract, but, as the edition of his text-book in which he speaks about this condition has not been at my disposal, I cite him from Glaeser: "Epidermoidal formations are found as thick and lamellated leaves of white, glossy layers of epidermis cells, which have desquamated. They occur in small patches, or cover large portions or even the surface of the whole apparatus, down into the urethra, as a proliferation occurring on the chronic inflammatory papillary mucous membrane." According to Orth,[59] satin like, glossy desquamations, consisting of hornified epithelial cells, form on an infiltrated mucous membrane, and this change may occur with tuberculosis, with cystic pyelitis, or alone, as he observed it in the case where there also was a xerosis of the conjunctiva.

In the pelvis of both kidneys strong thickening of the epithelium and a satin-like, glossy mass was found, with numerous brownish-yellow concrements.

Epstein[60] also saw such changes in the pelvis of the right kidney, with formation of papillæ in the mucous membrane.

Marchand observed a case which was described in a dissertation by Liebenow.[61] A perineal section of a boy of 14 years had led to the formation of a fistula, and epidermoidal changes of the epithelium of the urinary passages developed, which Marchand at first believed to be due to an ingrowth through the fistula, while later he gave up this belief, thinking the change was due to metaplasia. There was also a cholesteatoma on the lower surface of the diaphragm which probably represented a metastasis.

Kischensky[62] describes a primary squamous epithelioma of the calices, with a tendency to hornification and petrification. From the pelvis down to the bladder hornification of the upper epithelial layers was found, and the calices were filled with a new formation which had also involved the right kidney. Metastases were found in the liver, in the right knee joint, and also in the epiphysis and diaphysis of the femur.

Beselin[63] reports cholesteatomatous desquamation in the pelvis, with primary tuberculosis of the kidney on the same side, and Halle, epidermoidal changes in the pelvis, the ureters and in the bladder, with chronic cystopyelonephritis, while Braun saw epidermoidal changes in the pelvis of an extirpated kidney, with the stratified squamous epithelium, prickle cells, basal cylinder cells and a stratum corneum. The patient recovered after operation, and it seems that epidermoidal desquamation had caused the attacks of colic which had existed before the operation.

Pollak[64] describes a case which was observed by Lubarsch; in the pelvis, and up into the calices, were found glossy, gray-white patches consisting of hornified squamous epithelium, due, according to Pollak, to genuine metaplasia.

Metaplasia in the urinary tract has also been observed by Dr. William F. Metcalf and Dr. Homer E. Safford[65] of Detroit, who describe an epithelial metaplasia in the pelvis, with a stone in the lower part of the ureter of the same side, and at the seat of the stone an adenocarcinoma was found. This is surely of great importance, if we consider the rarity of carcinoma in the urethra. The case has not been published yet, but Dr. Safford had the kindness to send me his specimens and the description, in order to enable me to become acquainted with the details of the case.

In the bladder, cases have been described by Marchand[66] of squamous epithelioma with cancroid plaques, prickle cells and horn pearls; Halle,[67] chronic hypertrophic interstitial cystitis and epidermoidal changes confined to the mucosa of the bladder, and by Thompson[68] of Pollak.[69]

Thompson saw an epithelioma of the bladder; Cabot, a case of pachydermia vesicæ, with chronic cystitis, and Pollak, patches of epithelial metaplasia with chronic cystitis.

In the ureters Marchand[70] found squamous epithelioma in the pars membranacea, and the anterior part of the pars prostatica, and Blumm[71] writes about metaplastic changes in the urethra.

Neelsen[72] and Finger[73] found metamorphosis of the cylindrical epithelium to squamous epithelium in chronic gonorrhea, and Pollak,[74] also in the prostatic urethra in an inflammated mucous membrane, and also a papillary growth having the structure of a condyloma acuminatum. This growth had the size of a pea, and a hornified surface.

The reports of Thiersch, Bumm, Kleba,[75] Abbaran,[76] Kaufmann[77] and Lowensohn[78] were not accessible.

Genitalia.—In the testicle, Virchow[79] found cholesteatomatous masses in a fibrocystoid, and Lotzbeck,[80] cited by Beselin, a cholesteatoma of the size of a cherry-stone.

In the uterus Veit[81] and Ruge[82] are convinced that a metaplasia of the cylindrical epithelium of the mucosa of the cervix and that of the erosions to squamous epithelium occurs, and Ruge brings illustrations demonstrating such metamorphosis of the epithelium.

Zeiler[83] claims to have found squamous epithelium in the uterus in 63 cases, while Ruge and Gebhard[84] consider metaplasias in the uterus as a rare occurrence if we exclude cases where they occur on the surface of polypi of the cervix, which protrude through the external orifice, and also metaplasias in old inversion of the uterus, in the number of polypi the deepest part of which protruded through the external orifice. Küstner found squamous epithelium. The combination of glandular carcinoma and horny carcinoma has been described by Emanuel,[85] who brings good illustrations to prove that the epithelia have been changed to squamous epithelium. A case of "horning" of a carcinoma of the uterus, the size of an egg, the rest of the mucosa of the organ was covered with squamous epithelium, and Gebhard published a case of hornified squamous epithelioma of the uterus in a woman 66 years of age, which had infiltrated locally with carcinomatous acinii, and who wore a pessary for prolapsus of the vagina. Geilhorn[86] and Lahmann[87] each report a case of hornifying carcinoma, and E. Fraenkel and G. Wiener[88] saw cells in glandular carcinoma of the corpus uteri which very much resembled squamous epithelium. They formed pearls consisting of solid stratified epithelium.

Fleischlen[89] observed a case, and says: "All microscopic pictures prove the origin of the squamous epithelioma of the corpus uteri from the superficial epithelium. The cylindrical epithelium here has been changed into stratified squamous epithelium, which lines the whole inner surface of the uterus."

Pollak:[90] Case 1, psammocarcinoma, with hornifying epithelium and prickle cells; Case 2, typical prickle cells and hornification.

Hofmeier[91] reports four cases: an adenocarcinoma with typical squamous epithelioma, squamous epithelioma of the uterus, a squamous epithelioma and glandular carcinoma of the uterus, and a glandular carcinoma and squamous epithelioma in a woman of 56 who was a virgin.

In a case of Zablotsky[92] a microscopic examination of masses scraped from the uterus led to the diagnosis of a squamous epithelioma, and Emanuel[93] describes a hornified carcinoma of the uterus, the whole cavity of the uterus being lined with a stratified squamous epithelium.

Löhlein, cited by Fleischlen, describes a squamous epithelioma, and von Rosthorn's[94] article on hornification of the mucous membrane of the uterus has not been at my disposal.

Mammary Gland.—In the mammary gland, Kürateiner[95] observed an adenoma of the gland, with cylindrical and stratified and partially hornified epithelium.

Pollak[96] found squamous epithelial cells, prickle cells, concentric arrangement of the cells and hornification in a metastasis from a cylindrical cell carcinoma of the stomach in the lung. He says: "This case is of particular interest, as the suspicion of the development of epidermis cells from an aberrant germinal deposit can be excluded, the primary growth only consisting of cylindrical epithelium, as all the cells of the primary carcinoma originated from cells which embryologically have nothing in common with epidermis cells. If then, metaplasia is found in those metastases, it proves that cylindrical epithelium can be transformed to squamous epithelium under the influence of certain external conditions."

It may be that Pollak's opinion is the correct one, but he has not brought sufficient proof, or at least he does not say that he has

examined the whole primary growth, and he, therefore, can not exclude a metaplasia having occurred there, as we have seen it in other cases reported.

Cullen[97] reports a number of cases of squamous cell carcinoma of the uterus and cervix.

We have already mentioned a number of cases of combination of cylinder cell carcinoma with squamous epithelioma reported in literature, and there is no reason to suppose that such a combination could not occur in the stomach as well as in other organs, particularly since Borst has reported his squamous epithelioma of the stomach. To the reports, which I have mentioned above briefly, I only wish to add the conclusions to which Eichholz[98] has come in his experimental work. They are: "1. Stratified squamous epithelium can become so similar to epidermis that the two can not be differentiated. 2. In epidermoidal changes of transitional epithelium a metaplasia can not always be excluded with certainty, although in most cases, as in my experiments, it is to be supposed that an ingrowth has taken place. 3. Cylindrical epithelium can never form epidermis. This is proven by my experiments and by my examinations of human material. If an epithelial metamorphosis occurs in an organ, with cylindrical epithelium, then both, the cases reported in literature and the results of my own experiments, ingrowth of squamous epithelium or a development from an aberrant germinal deposit, furnish the explanation."

If Eichholz had given the cases reported in literature a more unbiased consideration, he would not have come to such radical conclusions. He would find it hard, indeed, to mention only one instance, to explain the occurrence of squamous epithelioma in the gall bladder, in cases where no fistula exists, without admitting a genuine metaplasia to be at least highly probable.

As regards the cases reported in literature, many of them must no doubt be classed as genuine forms of metaplasia, while others may have to be eliminated, but the process of sifting, in order to be of real value, must be done with great care.

If we review the cases recorded, adding our own, we can probably differentiate between three different forms of metaplasia, namely:

1. A more superficial form in the nose and its accessory cavities, and in the ear, where the massing of the desquamated cells often leads to the formation of cholesteatoma.

2. Metaplasias with considerable thickening and hornification, such as occur in the urinary tract and in the uterus, often in the course of time, followed by the formation of a squamous epithelioma.

3. Metaplasia which leads to squamous epithelioma so early that it is hard or impossible to find metaplastic changes in the mucous membrane surrounding the metaplastic tumor.

4. My own cases of metaplasia show strong downward growth at once, and it looks as if they belonged to the former class, but I should like to have it distinctly understood that they do not represent carcinoma yet, and that only further experiments can show what eventually becomes of them.

As to the causes of epithelial metaplasia, we have seen that hydropic conditions of the mucosa of the antrum of Highmore may lead to metaplastic changes. Catarrhal conditions, rhinitis and influenza rhinitis are pointed out as causes by Suchanek and others. Gonorrhea may lead to metaplasia in the urethra; tuberculous ulcers in the air passages, stones in the gall bladder and concrements and stones in the urinary tract play an important part, but the importance of mechanical factors is very clearly indicated by the fact that some animals who have to break up hard food in the stomach have a physiologic metaplasia with hornification reaching down to the pylorus.

In my own cases I think it very probable that friction has been the cause of the metaplasia.

In closing this paper, I wish to state that the frequent allusions to the close relation between metaplasia and carcinoma found in the literature here reported, and also in the report of my own work, are intended only to point out the actual relations as they exist, that the reader may receive a fair idea of them. The cases which have been reported make it very clear that epithelial metaplasia is very often followed by the development of a carcinoma, but what the real relations are between my metaplasias and carcinoma is a matter that can only be made clear by further experimental work.

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LITHEMIC NASOPHARYNGITIS DUE TO SYSTEMIC DISTURBANCE.*

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Inasmuch as closer and more accurate observation has been made, new facts brought out, old theories exploded, and better results obtained, since the reading and discussion of this topic at the Western Section of the American Rhinological, Otological and Laryngological Society held in St. Louis two years ago, I do not feel that it is necessary to offer any apology for bringing the subject again before you. I desire to emphasize in the very beginning that it is full and free discussion that we are after.

In the treatment of all disease, whether due to pathologic condition or functional disturbance, the fact as to the cause of the existing condition is what concerns us most. What is the matter and why does it exist, and what will relieve or palliate most effectually the condition that confronts us, are the perplexing questions that we must face.

By the term lithemic nasopharyngitis is meant that type of disease having a close etiologic relationship to rheumatism, or the so-called lithemic diathesis, and has its origin in autointoxication caused by the absorption of by-products from the intestinal tract, or in the faulty metabolism occurring in the liver.

It may be defined as an acute congestive rather than an inflammatory process.

In the former paper, I believed the cause to be acid urates which had not been eliminated by the proper channels, or the absorption of products from the alimentary tract, the exact nature of which was unknown. In a record of one hundred cases where the urine has been carefully examined, and indican in excess found, as soon as that form of treatment was followed which eliminated this, the patient was relieved, and as this was found more frequently than the excess of acid urates, I conclude it is the most potent excitant of the nasopharyngeal irritation. Hence more stress is put on its elimination than on uric acid. The local manifestations of this so-called diathesis may not be confined to the pharynx, but may exhibit itself in affections of the laryngeal, nasal, auditory, and gastrointestinal tract, without any special organic or systemic symptoms.

The attack causes primarily no lesion, and there is no distinct pathologic alteration, this being a local manifestation of a systemic condition. These cases were almost invariably neurotic, good livers, leading more of a mental than an active physical life. They complain of always taking cold, sneezing, have a stuffy, full feeling in the head, one nostril always stopped up, copious and frequent discharge from the nose, greatly annoyed by accumulation behind the palate and crackling noise in the ear. In addition to these nasal symptoms, attention will be called to a stiffness in the throat, with the sensation of a foreign body, like a piece of bread-crust or fish-bone in the tonsil. Altogether they are a miserable, snorting, snuffling, handkerchief using, irritable, and generally uncomfortable set who blame all their ills on a "catarrh."

Interrogation reveals the fact that more or less constipation exists and some laxative is frequently needed. Little water is drunk. Meat and sweets are freely used as well as salads, acids, coffee and tea. The skin is abnormally florid or muddy, in the former case suggesting too free use of alcoholics, in the latter so-called "biliousness"; in both cases the liver is most unmercifully suspected if not damned. A case with such a history leads me to suspect at once indicanuria with probably an excess of uric acid.

My observation is that where there is an abundance of indican in the urine in cases such as I have described there is no satisfactory and permanent relief until the treatment thoroughly eliminates this and the insufficient functioning of the large and small intestine be remedied and improper diet corrected. It is not so much a question of diet as of regulating the intestinal tract. In aggravated cases, I always have the gastric contents analyzed after giving a suitable test meal, in order to know how much, if at all, the stomach is at fault, for if gastric digestion is not complete, and the contents of the stomach are discharged into the duodenum in a hyperacid condition, the secretion of this organ is not sufficient to neutralize the acidity and, as a result, intestinal digestion is inhibited. The result is a putrefactive fermentation of the mass, developing disagreeable flatulence, dyspnea and intestinal distress. Many of the cases have more nasopharyngeal annoyance, in the form of sneezing, running at the nose, either immediately or several hours after eating. In the former case we suspect the trouble to be reflex gastric irritation; in the latter intestinal toxemia, due to indigestion.

It has been demonstrated that ingestion of citric, melic, or the fruit acids during peptic digestion inhibits secretion of hydrochloric acid and the peptic juices and increases fermentation of the carbohydrates, and the elimination of fruit in the diet, especially with meals, has been most beneficial. Where the patient craves an acid, and many of these patients do, dilute mineral acid drinks, preferably hydrochloric, are given with meals. When the cause of suboxidation is found and removed the victory is won, and in order to bring this about treatment must be directed toward elimination, atten-

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Laryngology and Otology, and approved for publication by the Executive Committee: Drs. G. Hudson Makuen, George L. Richards and John F. Barnhill.

tion to hygiene, and proper selection of diet, exercise in the open air to increase the oxygenating power of the blood, and the free and liberal use of non-medicated drinking water between meals

The intestinal tract with its varied and complicated organisms being out of adjustment, restoration to health (or the normal) means a readjustment of the basic function, and the function needing the most attention is the eliminative. Metabolism refers to the income as well as to the outcome of cell life, and where there is more put in and kept in than can be put out, poison is the result. The chief question to bear in mind is not what drug or what remedial application, but how best to remove the cause and restore the organs to normal.

TREATMENT.

As stated in a former paper local treatment is of little use, the disease being a local manifestation of a systemic disturbance. Sprays, gargles, etc., tend rather to increase the irritation. Any application containing astringents, cocain or similar drugs is contraindicated. In the beginning of the attack, if the parts are swollen and markedly congested, thorough cleansing of the pharynx, tonsils, postnasal space and anterior nares, with hot alkaline saline solutions by means of lateral and postnasal sprays, affords marked relief by removing the retained and viscid secretion.

The cause of the trouble being within the body and the result of absorption of by-products from the intes-

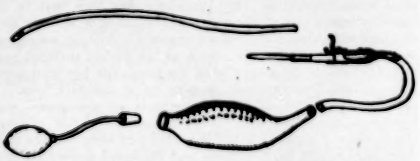

Fig. 1.—Oil injector devised by Dr. Julian McClymonds.

tinal canal, our treatment must be directed toward removing the cause. The first indication is to clean out the alimentary canal and give nature a good start and fair chance. The patient is put on a restricted diet and plenty of water given, an average of six ounces every hour. A dose of calomel and salol five or ten grains each is given, followed in six hours by a saline, preference being given to the Seidlitz salt.

In the afternoon, an hour before the evening meal is taken, the colon is filled and flushed with two or three quarts of soapsuds, by means of a thirty-inch-double-eyed colon tube. Three or four hours later, after the patient has been prepared for bed for the night, the colon tube is carefully reinserted the full length, and eight ounces of warm olive oil injected; the tube is then gently withdrawn, patient cautioned to keep quiet and go to sleep. The bowels rarely ever move till morning, or about eight hours after the oil is placed, if the patient is kept quiet. The injector which I use is the device of Dr. Julian McClymonds, gastrologist, who has rendered me valuable service in ascertaining and locating the source of irritation by examination of the gastric contents after a test meal. Also by chemical and microscopic examination of the urine.

The injector consists of an ordinary nursing bottle with two openings, one at top and one at bottom. In the lower opening a suitable conical tube about 14 inches long is inserted full length. The upper opening is fitted with a perforated stopper containing a small tube, to which is attached an ordinary atomizer bulb. (Fig. 1.)

The nurse or hospital orderly is carefully instructed in the method of giving the treatment, the procedure being as follows: The flushing is given late in the afternoon, an hour before the evening meal, the patient being in bed properly prepared, a rapid flow fountain syringe with capacity of three quarts is filled with soapsuds or normal saline solution, and brought close to the bed on a douche pole. To this is attached the colon tube thoroughly oiled, the best lubricant being castor oil, the cut off is tested, the cheeks of the buttocks are separated with fingers of left hand, and grasping the end of the colon tube an inch from the distal extremity, it is gently inserted past the sphincter ani. When this is done the cut off is released and the water allowed to flow, the tube being rapidly pushed into the bowel. The liquid separates the fold of the gut or floats any obstructive fecal mass out of the way, and makes the successful administration of the fluid not unpleasant. Should there be any pain before the tube is fully inserted or at least two quarts of fluid injected, the flow is stopped for a few seconds till this subsides, then started again. Any marked discomfort is due to moving of gas or the rough handling of the tube. When the full amount is injected, the tube is withdrawn, and the patient allowed to pass the contents of the bowel as soon as desired.

Experience has shown that the injection of the oil is followed by better results when given several hours later, the bowel having recovered from the effect of the washing, and the patient prepared for bed for the night, the oil is retained with more satisfactory results. In giving the oil, the patient is prepared as before, the injecting bottle being filled with olive oil and placed in a pan of hot water. The colon tube is slowly and gently inserted the full length, the tube of the injector is inserted into the projecting end of this, the injector bottle of oil lifted out of the pan of hot water, held upright, the cut off is released and the oil immediately begins to flow, the rapidity of flowing being increased by gently forcing air into the bottle by means of the rubber bulb. The time consumed in inserting the oil is not more than a minute or two, and the sensation to the patient is in no respect disagreeable, a good night's sleep is usually the result, and a copious evacuation of old fecal matter, with many scybalous masses and much gas is the result of the bowel movement the next morning.

Should there be much muscular tenderness or general malaise, strontium salicylate in 10 gr. doses is given every two hours till this is relieved. As a rule, this treatment given four or five days, then once or twice a week, is all that is necessary to give the patient a rapid and satisfactory start toward health. In a majority of cases observed the relief has been so pronounced, the patient so delighted at having found the source of trouble and been taught how to remove it and avoid its recurrence that the gratification has only been equaled by the satisfaction of the physician. Of course, careful attention must be paid to diet, avoiding the eating of much meat, saccharin food, or salads and use of alcoholics, and drinking freely of water between meals, attention given to the skin and caution as to leading too sedentary a life. Such a course when adhered to has given some of my chronic and intractable cases complete relief, not only of the nasopharyngeal trouble, but of other systemic lithemic affections.

If I am correct in my observations and conclusions that absorption of products of putrefaction from the in-

testinal canal is the cause of lithemic nasopharyngeal irritation, it is of paramount importance that the canal shall be thoroughly cleansed in the beginning of the treatment, and I know of no remedy given by the mouth that will satisfactorily do this without greatly taxing the vitality of the patient. In many of these cases the appearance of the scybalous masses removed after as many as ten of these treatments of the soapsuds followed by the oil, indicated they had been lying in the folds of the gut for weeks or months. Dr. McClymonds had several cases of intestinal toxemia that he observed very closely, and not until after the treatment had been given daily for several weeks was he reasonably sure that the canal was clean. The fact that the patient has one or more evacuations from the bowels daily does not prove the absence of retained toxic fecal matter. The effect of the colon flushings and oil treatment is: 1, mechanical, the scybalous masses being softened and separated from the folds of the canal; 2, the oil is broken up into fatty acids and glycerin, the absorption of the glycerin causing watery flow of bile from the liver, and these treatments must be followed by such remedies as will give tone to the muscular coat of the bowels and stimulate peristalsis. For these nux vomica and cascara sagrada should be given at first in full doses, then in gradually decreased doses, until it is no longer needed.

It is interesting to note the rapid decrease in the amount of indican in the urine as is shown by daily tests.

It is by no means necessary for the patients to quit their business and go to bed in order to take this treatment. Some of my patients spend the evening and night at the hospital for a week, others employ a trained nurse to come to the residence. Confinement to bed or to the house retards the progress. Emphasis is put on the free and liberal use of non-medicated water. Patients are urged to take at least six pints of plain water in twenty-four hours, and few can drink this much of alkalized or salined water without feeling uncomfortable on account of the increased blood pressure. Distilled or pure rain water is not so rapidly absorbed, much of it going through the bowel, assisting in carrying off the waste material and favoring free and satisfactory evacuation.

While there is an excess of uric acid in addition to the presence of indican in the urine, the drugs indicated are those that will hyperalkalize the blood and increase its solvency for urates. Subalkalinity of the blood indicates diminished oxidation, and consequently retarded nutrition, both being favorable to the formation of uric acid in the body as well as to the growth of pathologic micro-organisms, in this way favoring autointoxication.

Mild cases of lithemic nasopharyngeal irritation do not require the detailed treatment referred to, but are relieved by alkaline cathartics. The beneficial results from these are not so much from the absorption of alkaline substances into the blood as from antiseptic, antiputrefactive or antifermentative effect on the intestinal contents. The point made by Dr. Ballenger is: "One of the most beneficial effects is the retarding of the putrefactive process, especially that which produces the toxins so poisonous to the system; the chief indications are we should not attempt to do so much by dieting as by regulating the intestinal tract." Daily or twice daily laxative doses of sulphate of magnesia or sodium phosphate have given good results.

DISCUSSION.

DR. L. C. CLINE, Indianapolis—Dr. Stucky's paper calls attention to a class of cases that needs to be more emphasized and carefully studied. Most of us pay more attention to the methods of surgical treatment and equip ourselves with the latest improved instruments for doing surgical work. We have been passing through a wave of operative procedure regardless of causes that if cared for early would obviate the necessity for surgery in this particular class of cases. There is no question but many of us lose sight of the most important thing—hygienic and eliminative treatment. I have had a good deal of experience along these lines and thereby avoid operations. I fully recognize that some require surgery when first observed, while others need only cleansing and medicinal treatment. We are in some respects a peculiar people; we eat too much, exercise too little, spend too much time at business indoors, and as a result we all have the faulty metabolism and accumulation and retention of effete material mentioned in the paper. We should put these patients in good condition and correct their faulty habits. Instead of surgical instruments it might be better for some of us to carry home with us the doctor's syringe for injecting oil, improvised from a nursing bottle, and learn how to use it. None of us would think at first of operating on an enlarged hyperemic nose following specific infection, as it rapidly subsides under proper treatment. Cases referred to in Dr. Stucky's paper will do likewise. Attention to diet, exercise and care of the skin will accomplish much.

DR. S. F. SNOW, Syracuse, N. Y.—The tendency of the specialist is to become narrow, and Dr. Stucky has shown us that in this lithemic study narrowness has no place. He makes one observation with which I can not agree, that local treatment is of little importance. My experience has been that in all sensitive conditions of the nasal mucosa, though we may find the patient at first with nostrils apparently free, on second examination we will find the region of the middle turbinal congested. Perhaps three-fourths of the man's life has been spent with an enlarged turbinal pressing on a sensitive area. I question very much if, when these parts are overgrown, correction of the other parts of the system thoroughly removes the trouble. I agree as to the importance of removing systemic disturbances and have written and discussed papers on this subject. I do not think we can give it too much consideration, but I think we must consider the local treatment as well. Dr. Stucky has given us his methods in handling these cases, the injection of water, etc., and though I can not use his method in my narrow practice, I believe his ideas are based on sound reasoning. These points are of material importance in every case of hypersensitive catarrh.

DR. E. L. VANSANT, Philadelphia—After getting the patient in good condition an aspeticized diet is of the greatest importance. If the patient will leave off all uncooked food and eat aseptic food it will be of immense benefit in the case. I have seen several patients getting along beautifully until they ate some salad made with oil which was not pure, which indiscretion was followed the next day with all the symptoms of which they had previously complained.

DR. D. MCAULIFFE, New York City—I gather from the paper that Dr. Stucky believes indican to be the irritant that causes the trouble. It appears also from my work that these are cases of local irritation and not systemic, and this is proved by the fact that the administration of rhubarb or soda has the same effect as treatment of the other end of the canal. This part of the throat is at the crossroads of the respiratory tract and the alimentary tract, and the inflammation is more that of the alimentary tract than of the respiratory. It is simply a condition of plethora, and treatment of the alimentary canal relieves the plethora. I think the cure is to be obtained by relieving the acid condition.

DR. C. H. BAKER, Bay City, Mich.—As has been said, we go home with a kit of surgical tools and are disappointed because the majority of our cases are not amenable to surgical treatment. Probably nine-tenths of the patients coming into our offices do not require operative treatment to secure satisfactory

results. I think Dr. Stucky has sounded a timely note and has offered a solution of this difficulty. After twenty years' practice, during which I have believed that auto-intoxication was at bottom the chief cause of so-called nasal catarrh. I have been hoping that some one would tell us what chemical agent or agents are the cause of the inflammation of these mucous surfaces. We have been told that it is due to uric and other acids, to leucomains, to the products of intestinal fermentation and to all kinds of conditions, and at last it appears we have found the exact substance. I would like to have Dr. Stucky give us a short method for detecting indican which every busy man can apply in a few minutes and which will tell comparatively the amount of the toxic agent present. Dr. Stucky referred to the action of fruit acid in producing these conditions. The typical American breakfast starts out with fruits, cereals and predigested starches, and ends up with meats and other things that combined make an ideal culture medium for bacteria whose growth produces the chemical products which are so irritating to the digestive tract. It is not surprising that Americans are stigmatized as people suffering with catarrh. We are also known as sugar eaters. I would like to ask if these hay-fever people, who are nearly always lithemic, suffer more from indican during that period than any other.

Dr. J. Holinger, Chicago—How long after Dr. Stucky has given that course of treatment does the patient stay cured? A man goes back to the same mode of living, and in less than six months he is as bad as he ever was. The treatment must be repeated. After two or three years you have a neurotic patient who relies mainly on his rectal tube. We all know these patients and how much they bother us. If we can make a man understand that he has his muscles to use, his legs to walk with and his arms to exercise, we will accomplish much more than with these cures, which tend to substitute one evil for another.

Dr. R. C. Myles, New York City—For several years, in conjunction with a specialist on gastrointestinal work in New York City, I have been working along this line and have obtained practically the same results in these obstinate cases. We have relied principally on olive oil, placed in the bowel at night. Dr. Stucky's apparatus, however, is far superior to anything we have. There can be no doubt about the toxins from the colon manifesting themselves in the nose and throat. The edema, the character of the secretions, the decaying odor of the chemical changes, are all due to these toxins, as we have demonstrated in our treatment. This is much better than local treatment, though, of course, we use that also.

Dr. J. A. Stucky—I am sorry that I can not go deeper into this subject, for I am just beginning to learn something about it. As to Dr. Vansant's aseptic diet, if we get the canal thoroughly emptied and give the patient a good start it does not make much difference what he eats. I can not believe that this is simply a surface irritation. I have tried local treatment thoroughly and have become convinced that the local condition is a manifestation of the systemic condition. I do not know whether indican will be found in the secretions of the nose or not; it is the result of intestinal putrefaction. For three or four years I have been watching several cases of hay fever before and during the attack, and where I can get hold of them before the attack, thoroughly empty the canal, diet them and get rid of the indican, they either escaped the attack entirely or it was very much diminished. I am inclined to believe that this same cause has much to do with vasomotor coryza. As to how long these patients remain cured, it all depends on how long they take care of themselves. They are usually high livers, overfed and underworked; I have never seen any laboring man with indican in his urine. These patients are mental workers, and those who take sufficient exercise eliminate these products. The neurosis spoken of is due to the absorption of the indican, and my experience is that the relief obtained is sufficient to induce them to take care of themselves, and that it is not a habit.

Eight Epitheliomas Removed from a Single Tongue.—In the course of 21 years a recurring epithelioma on the tongue was removed eight times in a case described by P. Reclus of Paris.

SPONTANEOUS TONSILLAR HEMORRHAGE.*

LEWIS S. SOMERS, M.D.
PHILADELPHIA.

Spontaneous hemorrhage from the tonsillar region independent of traumatism or surgical measures, but as the result of destructive inflammation from a tonsillar or peritonsillar abscess, occurs but infrequently and in the majority of recorded cases the bleeding has resulted fatally. The following case is therefore recorded inasmuch as it presents several features of importance, namely, its successful issue without operative interference; the age of the patient and the harmful results following too conservative treatment of pus collections in or about the tonsils.

Mrs. A., aged 71 years, of excellent surroundings, had been ill for one week with a peritonsillar abscess of the left side.

History.—She had never had any trouble with her upper respiratory tract so far as she could remember, this being her first attack of tonsillitis. Her family physician attended her and the treatment consisted of strychnia, nutritive enemata and gargling with an alkaline solution. Two days before I first saw her the abscess had discharged profusely and she was emaciated, extremely weak and refused all mouth nourishment on account of the intolerable pain consequent on swallowing. I was called to see her at midnight for the first time, when the nurse stated that she was bleeding to death.

Hemorrhage.—During the evening she had suffered from great pain in the throat, and a few moments before I was summoned the nurse heard her groaning and strangling. It was then found that a column of blood was pouring from her mouth, and when I arrived a large basin was filled with bright arterial blood, the patient's clothing and bedclothes were covered with it, and a stream was still gushing from the mouth.

Treatment.—Pressure as forcible as possible was made over the carotid artery of that side; on account of the patient's prostrate condition and the inability to obtain proper illumination of the pharynx, it was impossible to ascertain the vessels involved in the bleeding, but with the unengaged hand forcible pressure was made by means of two fingers over the tonsil, compressing the pillars together, and a saturated solution of tannic acid was poured in the mouth, the hemorrhage diminishing sufficiently in amount to allow of this procedure. Strychnia and ergot were administered internally and within fifteen minutes the hemorrhage had practically ceased, but enough arterial blood still oozed away to stain the handkerchief. Fifteen minutes later the hemorrhage had entirely ceased and there seemed to be no further immediate danger.

Condition of Throat.—The following day a more careful examination of the throat was possible, as no more bleeding had occurred, although considerable pus had been expectorated. The abscess had destroyed the entire tonsil and in this way had involved several small vessels, while the main volume of blood was evidently derived from the artery of the anterior pillar of the fauces, through which there was a large ragged opening. The pharynx and pillars were much inflamed and the site of the tonsil was covered with a large ulcer, which in turn was covered with pus. Subsequently no further bleeding took place, but it was fully six weeks later before she had again returned to her normal condition.

PATHOLOGY.

The pathologic changes in these cases essentially embrace a purely destructive process, the tissues sloughing away before the eroding action of the confined pus, and although the statement has been made that this can only occur as the result of a gangrenous process, yet such is not the fact, as the few cases reported and also my own

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Laryngology and Otology, and approved for publication by the Executive Committee: Drs. G. Hudson Makuen, George L. Richards and John F. Barnhill.

show none of the phenomena allied to a gangrenous condition.

Jenkins,[1] in an epidemic of 65 cases of tonsillitis, observed one of these fatal cases in a child of six years, where the left tonsil completely sloughed away on the ninth day, with death from hemorrhage, and Bokay and Alexey,[2] in a boy of four years, with tonsillitis for three weeks, observed two hemorrhages followed by death and the autopsy showed that the tonsil and the surrounding tissue were filled with pus, while the destructive process had produced a perforation of the common carotid artery. Jacobi and Ewing[3] report an instructive case showing the pathologic changes in a child, where death occurred after tonsillitis of two weeks' duration, as the result of four hemorrhages at intervals of several days. The autopsy was not made until five months later, when it was found that there was a large cavity filled with blood between the right tonsil and the pharyngeal wall and the internal carotid artery was perforated; the first three hemorrhages apparently being derived from rupture of large veins and arteries attacked by the suppuration, while the fourth and fatal hemorrhage resulted from the opening of the carotid by the tissue destruction.

So long as the purulent matter is confined, the destructive elements remain actively at work and while the softer tissues are necessarily involved at first, yet if the pus be not evacuated by artificial means, or spontaneous evacuation is unduly delayed, the vessels are ultimately involved, the walls softening and final rupture must ensue. Various arteries may be involved in this destructive action, branches of the lingual, the ascending palatine and tonsillar from the facial and even the facial itself as in a fatal case recorded by Bosworth;[4] the ascending pharyngeal; the descending palatine; or finally the internal carotid as usually occurs in the majority of cases. The smaller arteries are, however, but infrequently involved in a hemorrhage of any magnitude, but that the blood flow is arterial in origin may usually be readily determined by its cessation or diminution when the carotid is forcibly compressed and also by the character of the blood.

The rupture of the affected vessel seems apparently to be the direct result of the local severity of the purulent process and not dependent on general causes such as hemophilia for instance, although the presence of another affection such as arteriosclerosis or the general impoverished condition of the patient may have some effect in determining the extensive purulent process. Such an implied condition being shown by a case of Keiper's,[5] in which the tonsillitis was considered albuminuric in origin and hemorrhage took place several times and was controlled with extreme difficulty. Seven days, however, after the tonsillar hemorrhages had ceased permanently, the patient died.

RELATION OF HEMORRHAGE TO RUPTURE OF ABSCESS.

As would be expected in these cases of tonsillar hemorrhage, the bleeding does not take place until usually late in the second week of the disease, or as in several of the reported cases, moderate hemorrhage would occur after the suppuration had existed for a week or ten days, and as the tissue destruction increased in extent, additional smaller vessels would be opened until finally the loss of blood from a large vessel would occasion the death of the patient. Such a case illustrating this point was reported by Brewer[6] in a man of twenty-five years, with peritonsillar abscess of over one week's duration. Then spontaneous rupture occurred followed by slight hemorrhage, repeated several times; while one of the hemorrhages was so profuse as to cause syncope, yet it was controlled until the final hemorrhage taking place, caused the death of the patient from exsanguination.

The relation of the hemorrhage to the time of rupture of the abscess has been especially noted in several cases and, as a rule, the flow of blood of any magnitude does not take place for several hours, or even a day or more after the pus has spontaneously evacuated; this, of course, being in harmony with the course of the tissue destruction, depending undoubtedly to some extent on the loss of support afforded the involved vessels by the pent-up purulent mass, in addition to the direct destructive action on the walls of the arteries. In the case reported here the abscess ruptured two days before the destruction had reached the vascular walls, while in a case reported by Dunn,[7] of abscess of the right tonsil discharging spontaneously, the hemorrhage was first noted twenty-four hours later; this was again repeated in forty-eight hours and, as during the following three days, several severe hemorrhages occurred and the condition of the patient had become critical, the common carotid was ligated with resultant rapid recovery.

In several instances, two, three or more severe hemorrhages took place before the patient succumbed or radical measures were resorted to for the control of the bleeding, and undoubtedly its cessation under such circumstances was dependent not only on the milder measures such as local medicinal applications, but to a considerable degree on the loss of blood producing a marked lowering of the arterial pressure, with consequent syncope and clot.

PROGNOSIS.

In all instances of such hemorrhage from the tonsillar region, the outcome must of necessity be a most grave one. Immediate death has occurred in several instances, while in others the fatal issue was delayed until several hemorrhages had occurred. In a case reported by Chappell,[8] the hemorrhage was controlled by making an incision through the anterior pillar, washing out and packing the abscess cavity. The same author in reporting this case found ten similar instances in the literature in which the hemorrhage occurred after spontaneous rupture of the tonsillar abscess and of these but two recovered, both being in cases in which the carotid artery was tied.

3554 North Broad Street.

DISCUSSION.

DR. W. E. CASSELBERRY, Chicago—I have no personal experience to relate, but I recall one case with the circumstances of which I was familiar, where the life of the patient was saved by the method ascribed to Dr. Chappelle. The abscess cavity was opened freely, washed out and packed with iodoform gauze. This is the most rational procedure, provided digital compression and perhaps compression by the Miculicz clamp have failed. If the cavity is such that it can not be made to retain the gauze I would consider ligature of the carotid artery indicated, provided the hemorrhage is immediately jeopardizing life.

1. THE JOURNAL A. M. A., vol. xxx, 1898.
2. Jahrbuch f. Kinderheilk., 1881.
3. Philadelphia Med. Jour., June 4, 1898.
4. Diseases of the Nose and Throat.
5. G. F. Keiper: Laryngoscope, November, 1898.
6. Yale Med. Jour., December, 1898.
7. Medical News, May 9, 1891.
8. Jour. of Laryn., Rhin. and Otol., June, 1900.

Clinical Reports.

OBSTRUCTION OF THE BOWEL DUE TO A ROUND WORM IN THE APPENDIX.

W. ALBERT NASON, M.D.
BOARING SPRING, PA.

The following case has some unique features which make it of sufficient interest to report.

Patient.—M. E. H., girl, aged 15 years, of Coalmont, Pa., was taken sick Tuesday, Aug. 16, 1904, vomiting freely, for which home remedies were tried.

History.—Wednesday, August 17, at 4 p. m., Dr. Evans of Saxton, four miles away, was called. Friday, August 19, Dr. Evans was again called, as vomiting persisted and was accompanied by some pain. Saturday morning, August 20, a consultation was held with Dr. Schum of Huntingdon. It was concluded that there was an obstruction of the bowels and that an operation probably would be necessary.

Examination.—I reached the case Saturday evening and found the patient suffering some pain, though it was not severe. Temperature had been normal each time when taken and was then normal. Pulse 120. Abdomen considerably distended. There was some tenderness, but at no particular spot. The vomiting was decidedly stercoraceous and had been so since Friday.

Operation.—All efforts to move the bowels had been unsuccessful, therefore operation was decided on. I made a median incision and found the bowels much distended, especially in the ileocecal region. On endeavoring to bring up the bowel I found it firmly bound down and the appendix wrapped around the small bowel. In the colon I detected peculiar feeling substances which proved to be two worms. One of these was in the appendix and had wrapped itself with the appendix around a loop of the small intestine and then the tip of the appendix had become adherent to the bowel and thus formed a constricting band. I was unable to free the appendix until, after opening the colon, I grasped the worm and drew it out. I also removed its companion and was then able to draw up the appendix and remove it, thus releasing the bowel. The contents of the bowel, being liquid, poured out over the intestines, which were afterward washed off with a carbolic acid solution, as it was impossible to procure sterile water.

Result.—The temperature remained 98, with pulse 120, till Monday, when it went up to 99. An enema on Monday produced a fair result. Salines began Tuesday caused large, free evacuations Wednesday. The highest temperature was 101 on Thursday. The stitches sloughed and were removed Wednesday. Patient made a rapid recovery.

The species of worm was the *Ascaris lumbricoides*.

A CASE OF POISONING FROM BELLADONNA PLASTER.

WILLIAM E. SANDERS, M.D.
ALTA, IOWA.

Patient.—Mrs. W., aged 79, called me at 7 p. m., August 24.

History.—I learned that at 10 a. m. she had applied a belladonna plaster 5x7½ inches over the lumbar spine. During the afternoon her face became flushed and there was a blue discoloration of the lips. She experienced difficulty in swallowing and complained of vertigo and dryness of the mouth. She had taken a dose of Paine's Celery Compound, and to this she attributed her symptoms.

Examination.—There was active delirium, restlessness, rigidity of the flexor muscles, carphologia, bounding pulse (102), temperature 100 F., difficult articulation and extremely dilated pupils.

Treatment.—Pilocarpin nitrate, gr. ⅛, was given hypodermically at once, and the belladonna plaster was removed; and after an hour morphin gr. ¼, with pilocarpin gr. ⅛, was given hypodermically.

Result.—In an hour the patient became quieter and regained consciousness about 3 a. m., August 25.

A SIMPLE OPERATION FOR SENILE ENTROPION.

CLARK W. HAWLEY, M.D.
Professor Ophthalmology Post-Graduate Medical School.
CHICAGO.

The patient, 80 years old, has suffered many years from trachoma and its following ills, among others senile entropion of the lower lid. The ptosis, the entropion and the corneal disturbance of the left eye is of very old standing, but the right entropion of the lower lid was of recent origin and was causing such corneal opacity that the patient's ability to get about was very much curtailed; she, therefore, asked for relief.

Entropion of this character has to do with the entire folding in of the lid and not to the contraction of the cartilage, and is not uncommon in elderly people not suffering from some other disease. It often seems to be due to a lack of tone in the muscles and skin about the eyes. She was not very hopeful, as one operation on the left lid proved a failure, but was anxious that something be done because of the severe pain and rapidly failing vision. I noticed that by making traction of the skin down and outward, accompanied by massage over the lower lid, that it would remain in its proper position for some time; I was tempted to try massage, but concluded that it would result in temporary relief only, so decided to try the following simple procedure:

Fig. 1.—Senile entropion. Dotted line shows where thread was placed.

I double-needled a piece of heavy silk thread; then, clamping the lid, a few drops of 4 per cent. cocain were injected into the skin; removing the clamp, one needle was inserted just below the margin of the lid, about the center, and carried down and outward slightly and as close to the cartilage as possible, passing on to the margin of the orbit, where I caught up the periosteum coming out on the skin. The other needle was inserted about three millimeters away from the first entrance and carried down parallel to the first thread, passing through the periosteum and coming out near the other exit. The two ends were then tied over a piece of cotton with sufficient tension to retain the lid in position, and allowed to remain so for two days, when the loop was fished out from the skin, and every day the threads were drawn back and fourth. At the end of two weeks a heavy band of cicatricial tissue formed; the threads were then removed, the lid being held firmly in position. The result is well shown in the photograph. I propose to treat the other lid in a similar manner.

The operation was performed in April, 1904. In September the patient reports that the result is still as good as at first, so that it gives every evidence of being permanent.

No claim is made for originality.

70 State Street.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

103 DEARBORN AVENUE . . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

SATURDAY, OCTOBER 15, 1904.

THE SITUATION AS REGARDS THE SERUM TREATMENT OF HAY FEVER.

The exasperating resistance to treatment of the disease commonly known as hay fever makes it one of the most interesting subjects to the practitioner. The great interest shown of late in the serum treatment and the present visit to this country of Dr. William Dunbar, who is a native of this country, and whose serum is being used so extensively for hay fever, make it of interest to review briefly some of the facts that have previously appeared in our own columns and in the literature on the subject.

The disease has been described under a variety of names, summer catarrh, hay fever, hay asthma, pollen catarrh, rose cold, June cold, concert fever, railroad fever, sun fever, dust fever, autumnal catarrh and peach cold. Many theories have been put forward to explain the phenomena of the affection. The pollen theory, especially supported by Blackley, was one of the earliest. The heat theory, the light theory, the nervous theory and other theories are familiar to all. Gradually the view became widespread that at least two factors are concerned in the etiology: a predisposition and an exciting cause. The theory of a bacterial origin found many supporters. Dunbar began by searching for a causal bacterium, but in the course of his studies became convinced that the disease is not due to bacteria, but to the irritative effect of pollen on the mucous membrane of susceptible persons.

Dunbar, in several papers,[1] has detailed the progress of his studies. Suffice it to say here that his experiments indicate that it is neither the mechanical action of the pollen grains themselves nor any oily or volatile constituent of them which sets up an attack, but instead, some proteid constituent of the nature of a toxalbumin. Of the pollens prevalent at the time of the early summer catarrh or hay fever proper, those of rye and maize contain the poison in largest quantities. In the autumnal catarrh of this country golden-rod (*Solidago*), ragweed (*Ambrosia*) and wormwood (*Artemisia*) have been held responsible. As little as 1/40,000 of a milligram of the rye-pollen toxin placed in the conjunctival sac will call forth in susceptible individuals a paroxysm of hay fever lasting several hours. This quantity of toxin corresponds to only two or three pollen granules. Dunbar asserts that while the toxalbumin constantly calls forth an attack in susceptible persons, it is without effect when instilled into the eyes or placed on the nasal mucous membrane of non-susceptible individuals. Liefman[2] proved that during the hay-fever period in Germany there is more than enough pollen in the air to account for the toxic effects on hay-fever patients, his researches thus confirming the earlier ideas of Blackley. He has shown also that on days when hay-fever patients suffer greatly there is more pollen in the air than on days when they are relatively free from symptoms.

Dunbar found on mixing the toxalbumin with the serum of animals which had been previously treated with pollen or the extracted poison that the former was rendered innocuous. Unlike diphtheria antitoxin, the hay-fever serum is not to be used subcutaneously, for subcutaneous injections give rise to unpleasant symptoms—itching, swelling and erythema. Experiments have shown that the local application of the serum to the irritated mucous membrane is more effective than its introduction hypodermically.

The serum has been patented under the name of "pollantin" in Germany, England and the United States. To the liquid serum ¼ per cent phenol is added, but this amount is not sufficient to delay bacterial growth, if the bottle has been opened and contaminated. Some people, too, have an idiosyncrasy for phenol and can not bear the application even of minute amounts. Instead of the pollantin liquid the substance is now supplied preferably in the form of pollantin powder, the latter being obtained by evaporating the serum to dryness, powdering it finely and mixing it with a little milk sugar. It is maintained that the substance is entirely harmless even in large doses. A single dose, it is emphasized, does not completely immunize the patient against all further attacks. On the contrary, during the hay-fever season the treatment has to be resorted to frequently, best every morning just before rising. Used in this way, it will, it is said, keep a patient free from attacks for several hours, sometimes for the whole day, even when he spends it in the open air.

This new method of treatment of hay fever originating in laboratory experiment, is rapidly being submitted to the test of clinical experience. In this country we have reports from Mayer, McCoy and Somers, and the articles of Bailey, Lockwood, Henderson and Dupuy also deal with the subject. The most complete review of clinical work thus far is that of Lübbert and Prausnitz.[3] They have collected some 222 cases of ordinary hay fever and some 63 of the autumnal form, 285 cases in all, which have been treated with the serum. Of the 222 ordinary hay-fever cases, 127 are said to have yielded a favorable result, 71 a partly favorable result, and in 24 the result was negative. That is to say, in 57

1. Dunbar, W. P.: Zur Ursache und specifischen Heilung des Heufiebers, Münch. u. Berl., 1903; see also Deutsche med. Woch., 1903, No. 9, and Berl. klin. Woch., 1903, Nos. 24-26, 28.

2. Liefman, H.: Ein Beitrag z. Frage nach d. aetiologischen Bedeutung gewisser Pflanzenkörner für das Heufieber., Ztsch. f. Hyg. u. Infectionskrank., Leipz., 1904, xlvii, pp. 153-178.

3. Lübbert, A., u. Prausnitz, C.: Zur Serumbehandlung des Heufiebers, Berl. klin. Woch., 1904, xli, pp. 273, 304.

per cent. of the cases marked relief was obtained; in 32 per cent. the relief was more or less marked and in 11 per cent. no benefit was derived. Of the 63 cases of autumnal catarrh 44 (or 70 per cent.) yielded positive results, 12 (or 19 per cent.) partly positive, and 7 (or 11 per cent.) negative. In view of the short time which has elapsed since this attempt at rational therapy has been begun, and considering the difficulty which physicians have in such a treatment in inducing patients to follow directions strictly, the results thus far gained must be regarded as favorable.

We think, however, that the whole question of the value of the treatment is as yet in the experimental stage. In a disease like hay fever, where at least in a large majority of the cases an oversensitive nervous system plays an important rôle, the greatest care must be exercised, especially in the judgment of the effects of therapeutic measures. We must await a much larger mass of clinical evidence before we pronounce positively in the matter. The disease is so widespread, however, and measures which are purely suggestive are, as a rule, so short-lived, that we can be tolerably sure in the course of the next few summers of arriving at definite conclusions regarding the efficacy of the serum treatment.

A word as to the commercial exploitation of the serum. Pollantin, as has been mentioned above, has been patented. Very vigorous business methods are being utilized to sell it. In Germany medical men think it no breach of medical ethics to patent a new remedy. Physicians feel differently about these matters in America. Should the serum treatment ultimately prove to be positively efficacious in the treatment of hay fever, it is highly desirable that it be furnished to the great host of sufferers at a nominal cost and not for purely commercial gain.

THE DECREASING BIRTH RATE IN NEW SOUTH WALES.

In view of the fact that the birth rate of New South Wales was apparently steadily declining, a royal commission was appointed to investigate the causes. This commission consisted of thirteen members, six of whom were physicians, with Dr. Charles Kinnaird Mackellar as president.

The first volume of the report of this commission has just been received. It contains the general considerations and conclusions and the testimony of the statistical authorities. The special medical testimony of physicians will appear in the forthcoming second volume. The commission found that the decline of the birth rate is a very serious fact in New South Wales, and concluded that the diminution of fertility and fecundity in recent years is due to the deliberate prevention of conception and the destruction of embryonic life and the pathologic consequences following on the means used and the practices involved therein. There is no evidence of any increase of physiologic sterility in the colony nor have they been able to trace the decline of the birth rate to any well-defined economic cause. Nevertheless, the commission report that they can not overlook the fact that restrictive regulations of trade designed to abolish competition and interfering with continuity of employment, rendering the income of those employed more precarious, indirectly discourage the existence of large families and the natural increase of the population.

The fall of the birth rate, which had been gradual between the years 1867 and 1887, was suddenly accelerated in 1888 and 1889, and has been marked since then, the fall reaching a total of 30 per cent. or more in the last twenty years. New South Wales alone, it is estimated, has lost since 1864 280,000 citizens from this cause alone, and Australia nearly 1,000,000. There is also a certain diminution in the natural increase of population in New South Wales, though the death rate there is less than in some other countries. In 1872 the natural increase was 24 per thousand; in 1902 it was only 15.22, a drop of 36 per cent. from 1872. With these figures, the time is not far ahead when the population will be actually on the decrease, provided present tendencies continue. The report goes at length into the questions of illegitimacy and other subjects bearing on the matter in hand, but space is insufficient to cover all these points. While the ratio of decrease of birth rate is still less in New South Wales than in some other lands, the rapidly progressing diminution is a very alarming fact. The defective birth rate is aggravated, moreover, to some extent in its effects by an excessive infant mortality.

In their conclusions the commission dwell more particularly on the moral effects on the community of the condition of affairs revealed. If Australia is to be a great nation and a power in the world, the present tendencies must be checked. Even if its present natural rate of increase is maintained, it will be forty-six and a half years before Australia will have doubled its population of 3,275,000; a poor prospect, indeed, when we consider the different state of affairs existing in its rivals for the supremacy of the western Pacific Ocean. The possibility of maintaining a "white Australia" is seriously imperiled by the present state of affairs. The commission say: "In whatever way the waning birth rate of New South Wales is viewed, whether in its effects on the health, character or social worth of individuals; on the value of the family as the basis of national life; on the quality and dignity of civic life; on the character of the people; on their social, moral and economic progress; on their national aims and aspirations; on their capacity to survive in the rivalry of nations; whether it is viewed in the light of history or of science, it is seen as a grave disorder, sapping the vitals of a new people, dispelling its hopes, blighting its prospects and threatening its continuance." They conclude with an appeal to the patriotism of the colonies to prevent the loss of the fair heritage of the British race in the southern seas which

is foretold by present conditions. The volume is a valuable contribution to the literature of a problem that is coming to the fore in other civilized countries than New South Wales.

BERI-BERI.

The appearance of beri-beri (beri is Singhalese for weakness) among the soldiers now engaged in bloody conflict in the far east calls our attention to a hitherto little noticed and, therefore, so to speak, new terror of war over which medical science as yet has little or no power. Beri-beri (or kakke, as it is called in Japan) is the pest par excellence of the Malay archipelago and peninsula, but given certain special conditions, it may occur apparently almost anywhere, as witness its occurrence among Newfoundland fishermen and in British prisons. It is widely disseminated in many tropical countries, including the Philippine Islands.

From the clinical and anatomic points of view, beri-beri may be described briefly as a peripheral neuritis, with changes in the central nervous system. Naturally, the disease may manifest itself in varying degrees of intensity; its manifestations will also vary greatly in the different periods of its evolution. For these reasons various classifications have been proposed, and of these the one by Hamilton Wright recommends itself especially for its comprehensiveness and simplicity. Wright separates beri-beri into three principal forms, namely: 1. Acute pernicious beri-beri. 2. Acute beri-beri (running a course of from three to six weeks, leaving the patient paralyzed). 3. Beri-beri residual paralysis.

Any one at all familiar with the clinical picture of acute peripheral neuritis and its consequences can readily reconstruct in his own mind the general clinical aspects of the second and third forms outlined in this grouping. Acute pernicious beri-beri—the first form—may terminate life quickly. Its main symptoms are great dyspnea, cyanosis and cardiac failure, symptoms that indicate that in this form the process attacks specially the nerves concerned in respiration and cardiac function. In some forms of acute beri-beri there may be a pronounced anasarca (wet beri-beri), and pernicious symptoms may arise in the course of such cases even when the progress appears satisfactory. Hence the prognosis in the acute forms of this disease, especially when associated with edema, is uncertain. So far as known, the course of the disease can not be materially modified by treatment. The gross appearances presented by the organs after death are not strikingly or positively characteristic of any single disease, so that, without the knowledge of the clinical history, it is not likely that a correct diagnosis of acute cases would be made postmortem without microscopic study of the nervous system, the central, and especially, of course, the peripheral. There may be more or less edema for which it might be difficult to account in the presence of normal kidneys and normal though dilated heart. Hamilton Wright lays great stress on the presence of congestion and erosion of the pyloric end of the stomach and of the duodenum, which are said to be constant in the acutely pernicious cases. Wright regards these lesions as the result of the localization of the unknown microbic cause of the disease, which here develops a readily absorbable and powerful neurotoxic substance.

Wright's interesting and plausible hypothesis as to the etiology of beri-beri was discussed in these columns of THE JOURNAL May 21, 1904. The hypothetical organism does not seem to have been described as yet, and it is sincerely to be hoped that this new theory does not only add one more to the long list of theories already advanced to explain the pathogenesis of this disease, which Manson says has been attributed to all sorts of causes: "to damaged fish, damaged grain; to rain, wind, heat, cold; to rheumatism, and many other things, including malaria." Still, in view of the large number of poisonous substances known to be capable of producing multiple neuritis and central nervous changes—lead, arsenic, copper, zinc, ergotin, alcohol, phosphorus, carbonic oxid and sulphid, chick-pea, bad maize, and the products of many microbic infectious agents as seen in the cases of primary and secondary infectious neuritis—it would hardly be surprising if it turned out that the term beri-beri as now used includes a variety of processes due to different causes. Certainly nervous tissues have a remarkable affinity for many harmful substances of diverse nature and origin.

The reactions between the components of nervous tissues and such substances now demand investigation, especially from the chemical side, if we are to understand better the mechanisms that lead to such grave disturbances in the structure and function of the nervous system. All additions to our exact knowledge of neuritis of whatever cause will help to unravel the difficult problems connected with the etiology, treatment and prevention of beri-beri. At the present time progress in these directions appears to hinge largely on the determination of the question whether the disease is microbic in nature or due to faulty hygiene and bad food.

COPPER SULPHATE AND WATER PURIFICATION.

The widespread current interest in the question regarding the effect of copper sulphate on public water supplies dates back to some important observations published last May by Moore and Kellerman in a bulletin of the Department of Agriculture.[1] The experiments, having in view the application of this salt ($CuSO_4$) to the water of reservoirs, appear to have been undertaken in the first instance with the aim of discovering a means of preventing the unpleasant odors and tastes due to the growth of algæ in stored water. A possible extension of this method to the destruction of pathogenic germs was considered by the writers of this bulletin incidental to their main investigation. The wide publicity given

1. Bureau of Plant Industry, Bulletin 64.

to the authors' experiments on the action of copper sulphate on pathogenic microbes appears not to have been foreseen by them. It is certainly true that some have drawn unexpected conclusions from the data presented in the bulletin mentioned. We are very glad to publish in this issue a letter[2] from the secretary of the Illinois State Board of Health concerning experiments which show the germicidal power of copper receptacles to have been greatly overestimated—at least in the popular press.

As regards the successful inhibition of algal growth by minute quantities of copper sulphate (0.25 parts per million), there can be no question. The first reservoir treated by this method was one at Winchester, Ky., which was grievously infested with the alga *Anabæna*, a well-known pest of water-works. The treatment there applied resulted in freeing the reservoir from the cause of offense in the most satisfactory manner. At Elmira, N. Y.; Cambridge, N. Y.; Butte, Mont., and Belchertown, Mass., a similar method of treatment has been practiced with what is thought to be eminent success. The cost of application of the salt is very low, and where the local conditions are carefully studied and the amount of copper sulphate added is in suitable proportion, there can be little doubt of the efficacy of the treatment. The highly toxic properties of copper salts and of colloidal copper have long been familiar. Naegeli's observations on the "oligodynamic" action of metallic copper are a well-known biologic classic. More recently Ficker has shown that such effect is perceptible even in dilutions of 1 to 50,000,000, and has brought out the interesting fact that the walls of glass containers once used in experiments of this character are extraordinarily difficult to free from all manifestations of such oligodynamic action.

It is another matter, however, to assume that a cheap and easy means of ridding water from disease germs has been discovered. It must be remembered that laboratory experiments are rarely if ever applicable without further investigation to complex natural conditions. It is well known, for example, that temperature profoundly affects the action of disinfectants, and this seems to be a point to which sufficient consideration has hardly been given in the present instance. The matter of simple inhibition versus destruction is also one calling for careful discrimination. Perhaps more important than all from the practical standpoint of water purification is the fact that the application of copper sulphate to an ordinary surface water leaves the turbidity unaffected, and yet it is well known that the problem of clarification is often one of the most difficult and expensive to solve. On the physiologic side, the evidence regarding the effect on man of the ingestion of small quantities of copper salts is so conflicting, and various investigators differ so vitally in their judgment of this matter, that a definitive conclusion on this issue at the present time seems hardly possible.

All things considered, the enthusiasm manifested in some quarters in favor of copper sulphate as a substitute for sand filtration seems hardly warranted by the facts at hand or by the conservative recommendations in the original publication by the Bureau of Plant Industry. It is worth while to bear in mind the caution of Moore and Kellerman, that "it would be a matter of regret if the method proposed here should ever be regarded as a universal panacea to be used by everyone, regardless of the organism to be eradicated and the condition of the water."

SUCCESS OF PROPHYLACTIC CAMPAIGN AGAINST YELLOW FEVER IN TEXAS.

We made reference last May to the yellow-fever situation on the Texas-Mexican border, and to the good work which was being done by the Public Health and Marine-Hospital Service, co-operating with the state health authorities of Texas and with the health authorities of Mexico, in preventing the recrudescence of the fever.

The usually accepted season for the appearance of yellow fever having passed, it is gratifying to note that there have been no cases of yellow fever along the Rio Grande during the present year. This result is in striking contrast with the history of epidemics of yellow fever in preceding years, when a greater or less number of cases denominated sporadic, for want of a better term, have always appeared in years succeeding an epidemic outbreak. The outcome is a cause for congratulation, but required much care and labor. For more than six weeks a daily inspection of every house in Laredo was made, and all cases of a febrile nature, due to no matter what cause, were screened from the access of mosquitoes. With the co-operation of the local authorities, who passed ordinances to make the work effective, a vigorous campaign was entered into for the elimination of all mosquito-breeding places, destruction of mosquitoes, and for the fumigation of all premises in which yellow fever or suspected yellow fever had occurred the year before. Sanitary expeditions were made along the railroads radiating from Laredo, and the aid of the state health officer, local health officers, railroad corporations and the communities themselves, was enlisted in a campaign of mosquito destruction, the prevention of mosquito breeding and the fumigation of buildings where cases were supposed to have occurred.

Summer having passed, therefore, without the appearance of the disease, so far as known, in any part of Texas, it may fairly be claimed that the efficacy of antimosquito work in the elimination and prevention of yellow fever has been vindicated. Due credit must be given the Mexican authorities for the sympathetic assistance they rendered by instituting like measures in areas and towns in Mexico infected and liable to infection at any time by the introduction of yellow fever from infected seaports in Mexico. There was little difficulty in enlisting the interest of the Superior Board of Health of the Republic of Mexico, and measures of

2. See correspondence department on page 1156.

the same kind pursued in Texas were at the same time going on in Mexican seaports and in places and towns in railroad connection with the same. This experience has demonstrated the usefulness and practicability of international agreement on sanitary matters.

MORE DEATHS FROM WOOD ALCOHOL.

The importance of the subject of poisoning by wood alcohol, treated of in the article by Drs. Buller and Wood, which is now appearing in THE JOURNAL,[1] receives marked emphasis in the death of twenty-five persons in New York City from drinking whisky made with that poison. All the victims lived in a section known as Stryker's Farms, and had been indulging in a carousal. Samples of liquor were secured by the coroner, and showed the presence of wood alcohol. This poison was also found in the stomachs of some of the victims. A mob attacked a saloon where some of the poisoned whisky was bought, the saloonkeeper is under arrest, and the occurrence has created great indignation and alarm in the districts mentioned. This is the largest number of fatalities from this cause in a single group, and it will certainly give emphasis to the need of adequate restriction in the use of this poison.

HOW THE FRENCH REGARD SURGICAL CARELESSNESS.

A distinguished Paris surgeon is reported, according to the cable dispatches, to be under indictment for homicide, because he inadvertently, it is presumed, left a portion of a broken instrument in the patient's abdomen after an operation. There are many surgeons who have had a like experience, so far as the accident goes, but this is the first case in which we have heard of a criminal indictment following such an event. Civil suits are not unknown. If the French law is such as to make such oversights criminal carelessness, it will be a special inducement to greater care against the occurrence. Of course, conviction in such a case is by no means a certainty. There are others beside the surgeon who should share or take the responsibility. The engrossing nature of a capital operation, requiring almost every faculty to be at special attention to the operative details, and the absolute necessity in many cases of trusting to assistants, such as can be had, should be very seriously considered. A little inattention on the part of the surgeon to the details of his own manipulation or its diversion to matters that have to be left to others, may be as dangerous to human life as the risk of the possibility of the inattention on the part of the subordinates to the details of counting sponges, artery forceps, etc. Surgery is a perilous business at the best, and there is nothing truer than the old saw that accidents will sometimes happen in the best-regulated families.

THE PSYCHOLOGY OF CHESS.

While the average chess player makes his moves with comparatively little foresight, in the high science of chess, as played by experts, each move for several moves ahead on both sides, including all the contingencies, is carefully thought out. Success depends on the perfection with which this is done, and the method is illustrated to some extent in a recent article in *Everybody's Magazine*, where the performances of the champion chess player, Pillsbury, in so-called blindfold chess, are discussed. Blindfold chess playing is playing without seeing the board, and requires an exercise of visual memory that is almost inconceivable. Pillsbury, it is said, has thus played sixteen simultaneous games with expert players, winning twelve, drawing three and losing only one. He was compelled to remember the position of each of the thirty-two chessmen on each of the sixteen boards. The enormity of the mental task may be suggested by the fact that on one board alone many thousands of different culminations are possible as the result of the first three or four moves. Pillsbury, of course, has a certain system and is permitted to choose his own openings, but this does very little to diminish the astounding character of the performance. It is probable that high-class chess playing is largely, if not exclusively, a matter of visualization, and this involves a kind and degree of mental strain that can not be considered other than abnormal. It is, in fact, practically an exercise in hallucinations—external projections of visual energies mentally conceived—and only possible with a probable special development of the visualizing centers and apparatus of the brain. This implies a certain abnormality, and unless the person is just so constituted and specially resistant to the possible influences, it may work damage to the general mentality. Great chess players, Morphy, for example, and others beside him, have broken down mentally to a certain extent, and this may be, perhaps, the cause. Others who have possessed this faculty of reproducing visual images have likewise shown the evil effects of its overexercise. The English painter, Blake, was a notable example. His power of reproducing the visual images of his sitters developed in time to a hallucinatory insanity. While the usefulness of the accomplishment in many walks of life is self-evident, its abuse may work serious damage, as in the cases mentioned. It is possible, indeed, to suppose that some chess players may be able to play chess well without this power, but it would be impossible in blindfold playing. Mathematicians do not seem to particularly possess it above other men, and the mathematical faculties are probably the purest intellectual ones that we possess. It may be that the visualization power commonly employed checks development in other directions. Galton, in his "Inquiries on Human Faculty," quotes second-hand the dictum of the great Napoleon that no man who habitually formed a picture (tableau) was fit to command. This may be an extreme view. It is referred to here simply as the opinion of one whose words have weight. Chess being, therefore, a game that more than others requires the exercise of this faculty, is an excellent amusement, but may be carried too far, and as some examples seem to show, may have possible dangers even for its masters. It would be interesting to know the real cerebral development, especially of the occipital lobes, of the great masters of chess.

1. THE JOURNAL A. M. A., Oct. 1, 8, 15, 22 and 29, 1904.

THE PREVENTION OF MALARIA.

Several interesting papers were read and discussed before the section on tropical medicine at the late meeting of the British Medical Association bearing on the question of the prophylaxis of malaria. The special point of interest and criticism was the reported ill success of the fight against malaria at a British military station in India. The conclusion reached by the reporters, Drs. Christophers and James, of the Indian medical service, was that mosquito brigades and similar methods of destroying malarial infection were practically futile or very doubtful in their results. The general opinion, however, seemed to be that when sufficiently carried out such measures have in many localities proved to be effective. Havana and Ismailia were quoted instances. It was also pointed out that the experiment of Mian Mir was carried out on entirely too limited a scale and under special conditions that were unfavorable. In fact, the experience of many years long prior to any organized efforts against malaria is, perhaps, almost as valuable in settling the question as the recent brilliant local results in Havana and elsewhere. There are large sections in the Mississippi valley where malaria was formerly very prevalent, but where it has almost, if not entirely, disappeared since cultivation and drainage have become more general. On the other hand, especially in tropical or warm regions, a careful study of the malaria-bearing mosquitoes should accompany or precede any extensive prophylactic measures. If, for example, it is found, as claimed in some Indian localities, that the malaria-bearing mosquito breeds only in running water, the petrolizing of the breeding places would more or less be ineffective. Irrigation is another very serious problem. If it is done away with in India or China, the result is famine. With it, we have malaria. Six hundred years ago the abolition of rice culture was ordered in certain sections of Spain on account of malaria, which was observed to be its constant attendant, as quoted by Dr. Crombie in the discussion. The dilemma is not a satisfactory one, and it is possible that in certain regions where irrigation is necessary malaria will be more or less persistent, but even there it would seem probable that the evil could be modified, if not abolished. If we could prevent the introduction of the germs by the human species, the mosquito might be comparatively innocuous. Recent experience in Massachusetts points this way. The anopheles must have existed there, but it was only after the introduction of the germs by Italian laborers that malaria became prevalent. Malaria is a contagious disease, and the recognition of this fact is the most hopeful phase of the question of its prevention. The other prophylactic methods beside larva-killing, such as isolation of cases, the free use of quinin, the use of door and window guards, are none of them to be neglected. They are all essential, but the main part of the war against malaria will have to be an offensive one against the malaria-bearing insects. Mosquitoes, perhaps, have their utility in the order of nature, but there is no reason why, under like conditions, one locality may not dispense with their presence as well as another. Even the so-called harmless ones are a nuisance, and there is no reason why it should not be abated.

THE OHIO HOSPITAL FOR EPILEPTICS.

The thirteenth annual report of the Ohio Hospital for Epileptics is just out, and contains matter of general interest. Under the present superintendent the institution has progressed along several lines, as indicated by the report of the board of trustees. The original institution, while prettily situated in the valley of the Ohio River at Gallipolis, was little better from an architectural and institutional point of view than a series of unlovely barracks, closely grouped, of severe lines and cheerless. The so-called "cottages" were designed for from fifty to seventy-five patients each, admitted of little or no clinical segregation of cases, and were much too large for discipline. In fact, the original plan of the institution apparently was the creating of a special almshouse for the housing of the state's epileptics. Numerous small cottages are being built on modern lines, admirably adapted to the care, treatment and study of differing stages of the disease and of patients of divergent social states. The patients now have systematic outdoor and indoor sports and exercises, as well as more outdoor labor for the male patients. The rigid enforcement of proper discipline on patients and attendants has brought the institution to a much higher degree of efficiency, but, of course, has brought the originator of this improvement the opposition of the political sponsors of some of the worthless employes who were allowed to depart. The discharges necessary to obtain discipline have been made the pretext for numerous public attacks on the superintendent, and also for much political intrigue looking to his removal and the substitution in his place of a man who will better suit the politicians who have political debts to pay. This institution is one of the few in the country that seems to be conducted entirely apart from political considerations and solely for the benefit of the unfortunate inmates. Word reaches us that the medical profession of Ohio is aroused to the situation, and is closely watching the trend of events. No doubt the Ohio physicians can be trusted to see that full justice is done to Dr. Ohlmacher, and in this they will have the active sympathy of medical men everywhere, who feel intensely the paramount necessity of keeping out of "politics" and out of the game of "graft" at least every institution designed to care for the unfortunate helpless wards of the state. The superintendent's report contains much interesting matter under the heads of "Statistics of Population," "Medical Statistics," "Occupation and Amusements," "The Scientific Work," "Scientific Papers Issued from the Pathologic Laboratory of the Hospital for Epileptics During the Year 1903," etc. All these deserve further review than space here permits. During the year of report an increased amount of pathologic work was accomplished and recorded. This hospital remains one of the foremost in the United States for its contribution to scientific literature, and is one of the few state institutions at which scientific work is systematically pursued. Of course, the figures regarding the cure of cases are not imposing, but the report shows that much has been and can be done to ameliorate the condition of these most unfortunate of mankind. The relentless progress of so many of the patients after

epileptic dementia is once established is graphically portrayed. The whole report makes a most creditable document.

Medical News.

ARKANSAS.

College to Open.—The medical department of the University of Arkansas, Little Rock, opens for the year on October 17.

Missing Physician Returns.—Dr. Richard G. Lightle, announced as having been burned to death several months ago, and later accused of an attempt to defraud a life insurance company, has returned to Searcy.

Smallpox is said to be epidemic at Dee, Craighead County, where 21 cases have been reported.——The city physician of Argenta, Dr. Homer L. White, reports that during the recent visitation 50 cases of smallpox occurred with 9 deaths, and that the total expense to the city was $1,701.82, or $29.34 per capita.

COLORADO.

Tent City for Consumptives.—A tented city, built up under the auspices of the Jewish Consumptives' Relief Society, on a 20-acre tract near Denver, where consumptives, regardless of creed or financial condition, will be housed and treated, was dedicated September 4.

Must File Certificates.—Dr. Alexander C. Magruder, Cripple Creek, the newly-appointed state medical examiner for Teller County, has notified all practicing physicians to file their certificates with the county clerk, in order that he may ascertain the names of the unqualified.

Petition for Rehearing.—In the case of Dr. L. Carrie Johnson, Pueblo, sentenced to imprisonment for 15 years in the state penitentiary for performing a criminal operation, after the Supreme Court had refused to grant a writ of supersedeas, her attorneys have petitioned for a rehearing.

Deaths and Diseases.—During August 809 deaths occurred in the state, equivalent to an annual rate of 16.34. Of these 31 died from typhoid fever, 8 from diphtheria and one from scarlet fever. During the month 82 cases of diphtheria, 26 of scarlet fever, 31 of smallpox and 250 of typhoid were reported, an increase in diphtheria and typhoid fever and a decrease in scarlet fever and smallpox as compared with the previous month.

GEORGIA.

Will Build.—The Atlanta College of Physicians and Surgeons is to erect new college buildings at a cost of $100,000.

College Open.—The Medical College of Georgia, Augusta, opened for the seventy-fourth year, October 3, with the largest class ever matriculated. Dr. DeSaussure Ford, the dean, delivered the opening address.

Stabbed in Fight.—Dr. John M. Spence, Waresboro, representative from Ware County, was stabbed and seriously wounded September 23, by a man whom he accused of having circulated false and slanderous reports about him.

Staff Changes.—Dr. R. H. Thigpen has resigned as head interne at the City Hospital, Augusta, and has been succeeded by Dr. J. M. Sigmen. Dr. J. B. Carter, Jr., has been advanced to junior interne and Dr. Asbury Stall has been made ambulance surgeon.

ILLINOIS.

Slayer Adjudged Insane.—George Wilkinson, who shot and killed Dr. Samuel L. Chapin of Saybrook, August 18, was adjudged insane October 3 and ordered to be committed to an asylum.

Smallpox.—Chatsworth reports five cases of mild type.——A case is reported from Charleston.——Shotgun quarantine was unsuccessfully attempted by a town lying between Belleville and East St. Louis.

Personal.—Dr. and Mrs. James W. Van Derslice, Oak Park, have returned from Europe.——Dr. and Mrs. H. Schafer, Freeport, have returned after a year in Europe.——Dr. William E. McClelland, Beason, is seriously ill with appendicitis.——Dr. Harry H. Whitten, Peoria, started, October 1, for Europe.

Chicago.

Popular Lectures Inaugurated.—The first of the series of popular lectures under the auspices of the Chicago Medical Society was delivered October 6 by Dr. Norman Bridge, on "Tuberculosis."

Personal.—Dr. Ralph R. Campbell has returned from a vacation trip to Johnstown, Pa., and Canada.——Drs. David F. Monash and E. J. Deering have returned from the European trip.

Fined for Fraud.—Dr. William S. Maharg, formerly city chemist, was arrested, together with four women, who garbed as sisters of charity, secured contributions for an alleged home for consumptives claimed to be operated by Dr. Maharg at an empty building on North Clark Street called the "Nazarene Mission." He was fined $100 and the women were remanded.

The Week's Mortality.—During the week ending October 8 410 deaths from all causes were reported, being equivalent to an annual death rate of 11.10 a thousand. Acute intestinal diseases caused 62 deaths; apoplexy, 7; nephritis, 26; bronchitis, 6; consumption, 49; cancer, 25; convulsions, 9; diphtheria, 6; heart disease, 30; nervous diseases, 20; pneumonia, 27; typhoid fever, 11; violence, 22; whooping cough, 3, and all other causes, 99.

Nephritis in Chicago.—The bulletin of the Health Department, for the week ending Oct. 8, 1904, states: "It is not reassuring to learn that nearly 6 per cent. of Chicago's male population in early manhood is afflicted with Bright's disease; and yet such is the inference warranted by the results of the examination made during the week by department physicians of 489 applicants for appointment to the city fire department. Of this number 29 (or 5.9 per cent.) were rejected for kidney trouble. When it is reflected that the principal cause of such trouble is exposure to cold and wet 'after a drinking bout,' the figures do not speak well for the habits of Chicago's young men. The first death from Bright's disease in Chicago was recorded in May, 1864, but it was not until 1868 that deaths from the malady were reported in sufficient number to compute rates. In the annual report of the commissioner for 1894 it was shown that the rate had increased 84 per cent. in twenty years, that is in the decade 1885-1894, compared with that of the decade 1868-1877, and it was then said—speaking of the group of steadily increasing diseases—that: 'Sanitary administration can do little with these diseases or with the increase of Bright's disease and of diseases of the nervous system. The high tension of modern life—nowhere higher than here in Chicago—with its besetting temptations to irregular habits and to excesses of various kinds, and its great strain on the most complex and most important mechanism of life—is something that the sanitarian can but recognize and regret; its relief and remedy will come only through saner views and modes of life.' 'Saner views and modes of life' have not yet arrived, and the death rate of Bright's disease has increased upward of another 80 per cent. in less than a decade—that is, from 5 in the 10,000 of population in 1894 to 9.09 in 1903, or 81.8 per cent in nine years. The apostle of 'The Simple Life' has not arrived in this country any too soon. Chicago needs him."

INDIANA.

Unlicensed Practitioner Fined.—Dr. George W. De Camp, Terre Haute, arrested on the charge of practicing medicine without a county license, was fined $25 and costs, on September 24.

School Inspectors Appointed.—The Indianapolis Health Board met September 27 and appointed 31 physicians, who will conduct the medical inspection of public and parochial schools and kindergartens.

Inspection of Schools.—A plan has been formulated by the Indianapolis Board of Health whereby the city is to be divided into 16 districts, and the children in each school in each district will be inspected at least twice a week.

Barrel of Alcohol Under Hospital.—An explosion of alcohol in the basement of the Marion Hospital, September 26, resulted in the fatal burning of a careless attendant, serious burns about the head and face to Dr. Albert Davis, superintendent of the hospital, and a panic among the patients. Little damage was done by the fire.

Personal.—Dr. Lee F. Hunt, Anderson, was recently operated on for appendicitis in Indianapolia.——Dr. Seymour C. Wilcox, New Albany, celebrated his eighty-sixth birthday an-

niversary September 20.——Dr. Whitefield Bowers, Michigan City, while engaged in target practice, September 28, was seriously burned by the premature explosion of a cartridge.——Dr. Augustus F. Tulley, Brazil, was painfully injured in a runaway accident, September 26.——Dr. W. R. Cunningham, Bourbon, has started for China, where he will establish and have charge of a hospital under the auspices of the Presbyterian mission board.

KENTUCKY.

City Hospital for Paducah.—After a third of a century Paducah is at last assured of a modern hospital to cost $25,000, which is now in course of construction on a high bluff at the confluence of the Ohio and Tennessee rivers.

Personal.—Dr. W. L. Montgomery, Lockport, in an altercation with the town marshal, was stabbed in the hand, arm and body by that officer, who was held to the grand jury.——Dr. William E. Truesdell, Newport, fell while alighting from a car, breaking a finger and cutting his leg.——Dr. John M. Chambers, Independence, has been critically ill from the effects of a fall from a horse.

MARYLAND.

Baltimore.

Personal.—Dr. T. C. Gilchrist has returned from Europe.——Dr. H. B. Jacobs is back from summering at Newport.——Dr. Charles O'Donovan was elected chairman of the section on clinical medicine and surgery of the Baltimore City Medical Society, under the new arrangement the Baltimore branch of the Medico-Chirurgical Faculty of Maryland.——Dr. H. Warren Buckler has been appointed a member of the tuberculosis commission.

New Surgical Building Open.—The event of the week was the opening of the new surgical building and clinical amphitheater of the Johns Hopkins Hospital, October 5. Addresses were made by Judge Henry D. Harlan, president of the board of trustees of the hospital; Prof. T. Clifford Allbutt of Cambridge University, England; Professor Louis A. Stimpson of Cornell University; Dr. W. S. Halstead, Dr. A. Jacobi of New York, and ex-President Daniel C. Gilman. In the absence of Dr. Henry M. Hurd, superintendent, Dr. William H. Welch presided. A luncheon was served, after which the tablet to Dr. Lazear was unveiled, Dr. William Osler presiding. Speeches were made by Drs. William Osler, W. S. Thayer and John J. Carroll of the Army. The surgical building cost $150,000, is four stories high and in general appearance conforms with the buildings of the hospital already erected. At night the medical school was opened with an address by Professor Allbutt.

Wants Embryos.—Prof. Franklin P. Mall has sent out a circular to the physicians of Baltimore soliciting donations of embryos, especially those of the first three months. The embryologic collection of the anatomic laboratory of the Johns Hopkins University owes its origin to the interest of the local profession. All the specimens are carefully preserved and catalogued and the good ones cut into serial sections. It is now one of the best collections, if not the best collection in existence, is used extensively for research and is often studied by advanced students of anatomy. From time to time either sections or whole series are sent to different parts of the country, and sometimes to Europe, which shows that these valuable specimens are appreciated and used by investigators in other laboratories. While the series are of the greatest scientific value, there are many stages still missing. Specimens are to be placed at once and without handling in a 10 per cent. solution of formalin or in the strongest alcohol and sent to the laboratory by express or messenger, the laboratory paying all expense.

MASSACHUSETTS.

Street Car Ventilation.—Cambridge has resumed its efforts through the Board of Health to secure purer air in its closed street cars.

Extermination of Mosquitoes.—Brookline has conducted a successful warfare on the mosquitoes this past summer; every cesspool was visited eight times and thoroughly petrolized; pools have been filled or drained.

Enlarged Emergency Hospital.—On October 1 the remodeled Emergency Hospital opened, as an emergency and general hospital. The new building is four stories in height and contains new optical and dental departments and a surgical supply room in addition to the usual wards, consultation rooms, etc.

Leprosy in Chelsea.—A Portuguese sailor from Providence, 32 years old, is a patient at the Marine Hospital in Chelsea, afflicted with leprosy, of which he says all the other members of his family have died and from which he has suffered for the last nine years.

English Health Officer in Boston.—Dr. Francis E. Freemantle, county health officer of Hertfordshire, visited Boston, in the course of a tour around the world, and inspected the contagious disease hospital, the vaccine and antitoxin plants, the sewerage outlet, storage basin, pumping station and the Lawrence filtration beds.

New Hospital Buildings.—The three new buildings erected for the Boston Insane Hospital, Dorchester, were opened for public inspection September 22. The buildings have been constructed at a cost of $350,000 to carry out the idea of classifying patients. There are at present 611 patients in the hospital, many of whom will be transferred to the new buildings.

Meeting of Boards of Health.—The quarterly meeting of the Association of Massachusetts Boards of Health will be held at Mt. Tom, Oct. 13, 1904, the Holyoke Board of Health being hosts. Papers will be read descriptive of the Mt. Tom Reservation, on the new plant for the preparation of the supply of free vaccine for the state, on the results of Boston's examination of bacteria in milk, and in regard to the recent epidemic of typhoid fever in Boston. Of the last disease 54 cases were reported for the week ending October 8, an increase of 90 per cent. over last year.

Thousands for Hospitals.—Mrs. Sarah E. Potter of Boston, in her will, made the following bequests to hospitals and similar charities: Kindergarten for the Blind, $100,000; Boston Medical Library, $150,000; Boston Home for Incurables, $50,000; Hospital Cottages for Children, Baldwinville, $50,000; Free Hospital for Women, Brookline, $50,000; St. Luke's Hospital, New Bedford, $30,000; Convalescent Home of the Children's Hospital, $25,000; New England Peabody Home for Crippled Children, $25,000; the Children's Hospital, Boston, $25,000; Massachusetts Charitable Eye and Ear Infirmary, $25,000; Boston Floating Hospital, $20,000; West End Nursery and Infants' Hospital, $10,000; New England Hospital for Women and Children, $10,000; St. Luke's Home for Convalescents, Roxbury, $10,000; Industrial School for Crippled and Deformed Children, $10,000; the Consumptives' Home, Boston, $10,000; Sharon Sanatorium, $10,000; Boston Lying-in Hospital, $5,000, and Children's Island Sanatorium, Salem Harbor, $5,000.

Boston.

Vital Statistics for Boston.—For the nine months ending September 30 there were reported to the Boston Board of Health 8,186 deaths; 2,541 were under 5 years and 1,805 less than 1 year old. During July, August and September there were 1,032 deaths under 5 years, and of these 809 were under one, while the total for that three months was 2,625. In the nine months there were reported 3,566 cases of measles, with 78 deaths; 1,920 cases of diphtheria, with 153 deaths; 1,618 cases of consumption, with 986 deaths; 585 cases of typhoid fever, 77 deaths; 733 cases of scarlet fever, 35 deaths, and 978 deaths from pneumonia.

MICHIGAN.

Personal.—Dr. Ovidus A. Griffin, Ann Arbor, has returned from Europe.——Dr. J. A. Cameron, Pickford, has disposed of his practice and expects to go abroad.

Michigan College Opens.—The Michigan College of Medicine and Surgery, Detroit, opened for its fall term, September 21, with an illustrated lecture by Dr. Heneage Gibbes, and addresses by other members of the faculty.

Comparative Prevalence of Disease.—For the month of September, compared with the average for the month in the ten years, 1894-1903, smallpox and puerperal fever were more than usually prevalent; and dysentery, intermittent fever, pleuritis, remittent fever, erysipelas, whooping cough, pneumonia, meningitis, measles and inflammation of brain less than usually prevalent.

The Most Dangerous Communicable Diseases.—Meningitis was reported present in Michigan during September at 8 places, whooping cough at 17 places, measles at 28 places, pneumonia at 33 places, diphtheria at 68 places, smallpox at 69 places, scarlet fever at 73 places, typhoid fever at 196 places, and consumption at 304 places. Meningitis was reported present at 1 place more, whooping cough at 7 places less, measles at 10 places less, pneumonia at 7 places more,

diphtheria at 2 places more, smallpox at 37 places less, scarlet fever at 1 place less, typhoid fever at 35 places more, and consumption at 9 places more, in September, when compared with the preceding month.

NEBRASKA.

South Omaha Hospital.—Beginning September 1, South Omaha has agreed to make a monthly appropriation of $100 to the South Omaha Hospital Association.

Personal.—Dr. Carleton S. Shepard, Omaha, has been seriously ill with appendicitis.——Dr. Ray G. Pheasant, Osceola, has gone to Europe and expects to be away for two years.

Jonas Convalescent.—Dr. A. F. Jonas, Omaha, who was operated on last December for gallstone disease, and was again taken ill in June, the symptoms becoming more severe until July 20, when a calculus was removed from the common duct, writes that after a severe and tedious convalescence due to infection of the bile passages, he is now able to do some work. He intends to start for Germany some time this month, to remain three or four months.

NEW YORK.

Warning.—The profession should be warned of a man claiming to be a German physician in distress in this country, who is visiting physicians soliciting funds.

Jamestown's Water Good.—Dr. W. G. Bissell of the Department of Health, who examined Jamestown's water supply at the request of the water commission of that city, reports the water in excellent condition.

Personal.—Dr. Louis A. Weigel of Rochester has been made seriously ill as the result of the frequent use of the Roentgen rays in his practice. He has had two fingers amputated and there has been but little improvement in his condition since the operation.

Guarding New York's Water Supply.—Owing to the prevalence of typhoid in New York City extreme precautions are being taken by the authorities throughout the entire watershed region. The trees and underbrush bordering immediately on the water have been cut down. The sewage system of Mount Kisco, where there has been some typhoid and where there is doubt as to the condition of the sewage system, is being thoroughly investigated. If any danger threatens an appeal will be made to the State Board of Health.

Typhoid Fever at Summer Resorts.—The State Department of Health has issued a bulletin calling attention to the insanitary conditions prevailing at summer hotels and ascribing the epidemic of typhoid fever at Albany to that cause. The bulletin states:

> This epidemic and many others investigated in the past have shown that hundreds of persons are infected every summer with typhoid fever at country resorts, and return to the city before the disease manifests itself, thus making the number of cases reported to the city boards of health unusually large in the early fall. The same circumstances doubtless surround the increase of typhoid fever in cities in the spring when many persons return from the resorts of the South.

The department suggests that the proprietors of hotels will doubtless be glad to co-operate with the authorities in making their surroundings more healthful.

Buffalo.

Scarlet Fever Abates.—There are no further cases of scarlet fever arising from the infected certified milk. The state agricultural department is instituting proceedings against Mr. Briggs for having unlawfully sold milk under the label of certified milk.

Free Examination of Sputum.—The Department of Health has issued a circular to physicians asking them to co-operate in instructing the public generally and in availing themselves of the privilege of free examinations of sputum and to report cases of tuberculosis, and in furthering the efforts of the department to control the disposition of sputum and the disinfection of the patient, his clothing and domicile.

New York City.

The Mackay Fair.—This fair, which was held for the benefit of the Nassau Hospital, netted $10,750. Of this sum $2,000 is to be used annually for three years in defraying running expenses and the bulk of the remainder is to be added to the endowment fund.

Contagious Diseases.—There were reported to the sanitary bureau for the week ending Oct. 1, 1904, 356 cases of tuberculosis, with 147 deaths; 221 cases of diphtheria, with 31 deaths; 136 cases of typhoid fever, with 18 deaths; 88 cases of scarlet fever, with 1 death; 51 cases of measles, with 5 deaths; 16 cases of varicella, and 13 deaths from cerebrospinal meningitis.

Typhoid Cases Below Normal.—Dr. Darlington of the Health Board states that typhoid statistics are better than in the several preceding years. For the first thirty-nine weeks of 1902 2,148 cases were reported; in 1903, 2,505, and in the same number of weeks this year,2,042. In the thirty-ninth week of 1902 155 cases were reported; in 1903, 119 cases, and this year, 102.

Personal.—Dr. Elizabeth Gillispie of Brooklyn has obtained a verdict of $1,000 against the Brooklyn Heights Railroad Company in a suit for damages caused by the use of abusive language by one of its conductors.——Drs. Clifford Allbutt of London and B. Laquer of Wiesbaden were guests at the Academy of Medicine, October 6.——Dr. L. Duncan Bulkley returned from the continent, October 4.

New Anti-Smoke Ordinance.—The Board of Health has amended the section of the sanitary code in regard to the smoke nuisance. The amendment now makes it unlawful to permit smoke to issue from any building "to the detriment or annoyance of any persons not being therein or thereon," or to permit the smoke "to enter any other building or to pollute the air in any street or thoroughfare within the city limits."

OHIO.

School Opens.—The medical department of Western Reserve University, Cleveland, opened October 3 for the year 1904-1905.

Damages in Libel Suit.—In the suit of Mayor John S. Mudell of Oxford against Dr. Robert Harvey Cook of the same city for libel, the offense alleged being that the defendant in a circular charged the plaintiff with untruthfulness and suggested that he could be bought, the jury decided for the plaintiff and gave him a verdict for $1,400.

Condensed Courses.—The trustees of the Ohio Medical University propose to shorten the academic and medical courses one year, allowing academic students in their senior year to take the first year of work in the medical school, receiving the A.B. degree at the conclusion of the year, and the M.D. degree three years later, thus condensing the combined courses into seven years.

Personal.—Dr. John A. Caldwell has resigned his position as resident physician at the Cincinnati Sanitarium to enter private practice in Cincinnati, and has been succeeded by Dr. Charles B. Rogers, formerly of Massillon State Hospital and late of Fair Oaks Sanitarium.——Dr. Allen B. Thrasher has been elected professor of laryngology of the Medical College of Ohio, Cincinnati.——Dr. Henry R. Mallory, the oldest practitioner in Hamilton, is seriously ill with apoplexy.——Dr. and Mrs. John E. Myers, Springfield, have gone to Cuba for the winter.——Dr. and Mrs. E. D. Burton, Cleveland, celebrated their fiftieth wedding anniversary, October 4.

PENNSYLVANIA.

Diphtheria in Chester.—Diphtheria continues present to an alarming extent in Chester, and by special order of the Board of Health several of the public schools have been closed. The sewage plant of the city is in extremely bad condition and the persistent presence of the disease is attributed to this condition. A malignant type of diphtheria has also made its appearance in Monarch, Schuylkill County. More than a score of children are afflicted with the disease and several deaths have occurred. The public schools have been closed.

Report of State Hospital for the Insane.—According to the twenty-fifth annual report of the State Hospital for the Insane, at Norristown, there were treated in the institution during the year just ended 1,175 persons. Seventy-six patients were discharged as cured, 10 as improved and 3 unimproved. There were only 78 deaths during the year. The greatest number of patients in the hospital at one time was 1,196, and the total number was never less than 1,126. Ten of the patients marked as absent from the hospital are escaped criminals. The death rate for the year just closed is lower than for fifteen years previously.

Philadelphia.

Personal.—Dr. and Mrs. S. Lewis Ziegler, Dr. and Mrs. A. O. J. Kelly, and Dr. and Mrs. McCluney Radcliffe have returned from Europe.

Prominent Foreigner Here.—Dr. G. Marcelle of Brussels, and surgeon to the Charity Hospital of that city, visited here and studied the methods in the various hospitals. Dr. Marcelle was a special representative of his country to the St. Louis exposition.

Isolation Ward for University Hospital.—A contract is awarded for the erection of an isolation ward in the rear of the University Hospital. The building will be firebrick, with all the modern appliances for the isolation and treatment of all forms of contagious disease. The cost when completed will be $13,000.

Officers of New Chestnut Hill Hospital.—The physicians attached to the new Chestnut Hill Hospital are Dr. John H. Musser, in charge of the medical department, and Dr. Harry Wharton, consulting surgeon. The superintendent is Miss Rena Wood, formerly of the Children's Hospital. The president of the institution is Dr. Radcliffe Cheston; vice-president, Rev. Dr. J. Andrews Harris; secretary and treasurer, J. Andrews Harris, Jr.

Money for His Alma Mater.—By the terms of the will of Dr. Spencer Norris of the class of 1871, the trustees of the University of Pennsylvania received a sum exceeding $10,000. This is to be invested and the income resulting therefrom is to be awarded each year to the medical student graduating who shall pass the best final examination. It will be known as the Doctor Spencer Morris prize and the income will amount to about $400 annually.

Health Report.—The total number of deaths for the week numbered 380, a decrease of 19 from last week, and a decrease of 15 for the corresponding period of last year. This is the lowest weekly death rate recorded in the city for many years. There were 88 new cases of typhoid fever reported, an increase of 8 over the previous week. There were 219 new cases of contagious diseases with 16 deaths reported, as compared with 200 cases and 17 deaths for the previous week. No new cases of smallpox were reported.

Loving Cup for Provost Harrison.—The medical students of the university, to show their appreciation of the efforts of the provost, presented him with a beautiful loving cup on the opening day of the college. The cup is 20 inches high, and is inscribed as follows: "A token of love and esteem in appreciation of his earnest efforts and interest in the advancement of the medical school. This cup is presented to Provost Charles Custis Harrison by the students of the medical department of the University of Pennsylvania, Sept. 30, 1904."

New Italian Hospital Opened.—The Italian Hospital erected in the heart of the Italian colony was opened for the admission of patients October 5. The building is a three-story structure and has an enclosed roof garden to be used for convalescent children, and also for the isolation of tuberculous patients. The staff of the institution at present is as follows: Dr. Cicone, superintendent; Drs. Bey, De Stefano, Ruffel, Lowenburg, Menah, Hurlong, Craney, Louis Jacobs, H. I. Cathrall and Georgio Sparano. Miss Lida Reeves Neal is the superintendent of nurses.

Fresher Milk for the City.—An effort is being made by Director Martin, chief of the Health Department, to secure a fresher supply of milk for the city. The milk received in the city at the present time is practically two days old before it reaches the consumer. This is due to the fact that the milk shipped from the surrounding counties does not reach the city until the afternoon or the following morning. Efforts are being made to have the evening milk shipped in time to bring the milk here in the early morning, by having the railroad companies arrange a suitable schedule. A change in the Philadelphia milk supply has long been needed.

Work of the Hospitals.—At the Methodist Hospital during the month of September 2,704 visits were made to the dispensary and 76 patients were admitted to the wards. In the Howard Hospital on an average of 60 patients a day were treated, and during the month 1,681 were treated in the different dispensaries. Seventeen hundred and seventy new patients were treated in the Polyclinic Hospital, and with the return visits to the various dispensaries brought the total to 8,456 cases. In the Medico-Chirurgical Hospital 5,692 patients were treated; in the St. Agnes Hospital 594 new and 2,571 old cases were treated; in St. Mary's Hospital 144 patients were admitted to the wards and 3,100 patients were cared for in the different dispensaries.

TEXAS.

State Board of Health.—At a meeting of the Bexar County Medical Society, October 6, the advisability of establishing a state health board was discussed. At present Texas has a health officer, whose duty it is to attend to all matters of quarantine and public health. Many members of the profession, however, believe that a state board of health should be created and that all matters relating to quarantine and public health should be passed on by that board. They also claim that the quarantine now maintained by the state of Texas along the Texas coast and Mexican border should be turned over to the Federal authorities, as the points are national boundary lines and should, therefore, be cared for by the national government. They point out also that state boards of health prevail in Louisiana, Mississippi, Alabama, etc., and that they have been successful in handling quarantine matters. The society passed a resolution, the object of which is to prevent any action by the legislative committees of the state association until it can hear the views of the legislative committees of the 140 county societies. The resolution provides that as medical legislation of vital importance to the public health of the state will probably be asked of the next legislature and the medical profession will be called on to lend its aid in securing such legislation, and that as the profession of the state have a right to be thoroughly enlightened on the measures they are expected to support, the Bexar County Medical Society asks the other component county societies to join in requesting the chairman of the committee on legislation of the state association to call a meeting of the committees on legislation of the county societies and that each county society request of the chairman of the committee on legislation of the state association copies of the bills intended to be presented to the state legislature.

UTAH.

A Travesty on Justice.—J. W. Pidcock of Ogden was fined by Judge J. A. Howell for practicing medicine without a license from the state board of medical examiners. Our reporter says that defendant had a contract with a druggist whose influence tempered justice, and he remarks that such mock justice tends to discourage the efforts of physicians to maintain a better standard of medical fitness.

New Salt Lake Hospital.—Dr. Joseph S. Richards, chief of staff of the new Groves Latter-Day Saints' Hospital, Salt Lake City, has gone east to procure the equipment for the institution. The staff members thus far selected are Drs. Fred Stauffer, Leslie W. Snow, Joseph S. Richards, Samuel H. Allen and Charles F. Wilcox. Up to date the building has cost about $150,000, of which $45,000 was a bequest of the late Dr. Groves.

CANADA.

Opening of Medical Department of Toronto University.—On September 4 the medical faculty of Toronto University reopened for the session of 1904-1905. Prof. J. Algernon Temple, in the opening lecture said that the experience of the past year had demonstrated beyond question the wisdom of union of Trinity and Toronto.

McGill University Celebrates Its Seventy-Fifth Birthday.—Principal Peterson delivered the lecture commemorating the seventy-fifth anniversary of the founding of McGill University, and sketched the history of the university and the progress it had made. The lecture served also to honor the anniversary of the birthday of the late Hon. James McGill, its founder.

St. Paul's Hospital, Vancouver, B. C.—The new annex to St. Paul's Hospital, Vancouver, B. C., was opened recently. The new wing is 45 feet wide and 145 feet long, and consists of three stories with a basement. One of the wards was fitted up through the generosity of Dr. Langis of Vancouver. This hospital can now accommodate about 400 patients. The institution is non-sectarian and is open to every race and creed.

General Gift to Toronto General Hospital.—Toronto General Hospital has been given $100,000 by Mr. Cawthra Mulock of Toronto to erect an out-patient building, so much needed by the institution, and to provide satisfactory clinical teaching for the University School of Medicine. It is not yet decided whether this out-patient department should be erected as a wing to the present hospital or built adjoining the medical building of the university to serve a better purpose for clinical instruction.

Toronto General Hospital.—There were 211 patients in the Toronto General Hospital on Aug. 31, 1904. There were admitted during September 290 patients; births, 13; total in September, 514. Patients discharged in September, 224; died in September, 27; patients in the hospital September 30, not including infants, 244. During the month 1,112 patients were treated in the externe departments. Two hundred and thirty-one accident cases received first aid at the emergency branch of the hospital. Of the 27 deaths five were from tuberculosis.

FOREIGN.

Golden Jubilees of Physicians.—Among the physicians who have recently celebrated their golden wedding with medicine, that is, the celebration of the termination of fifty years of practice, are Prof. M. Blancas, one of the most prominent medical authorities of Buenos Ayres, and Professor von Voit of Munich, Germany.

A Chemical and Pharmaceutical Congress.—An international exposition is to be held at Liége, Belgium, opening in July, 1905. In connection therewith there will be a congress of chemistry and pharmacy, organized under the auspices of the Liége Pharmaceutical Association and the Chemical Society of Belgium. Questions relating to legislation and professional ethics will be discussed in addition to technical matters. Address for further particulars M. J. Raymond, 16 Place des Carmes, Liége.

Bubonic Plague.—*Public Health Reports* states that the Transvaal is now free from plague. A report from Brisbane, Queensland, states that the last case of plague in man in that state occurred on June 12, and the last plague-infected rat was found July 29. In Fuchau, China, there is an epidemic of plague in the native portion of the city. So far as is known, there are no cases in the foreign quarter. In Bahia, Brazil, there are a number of cases of plague, and several deaths from the disease have occurred. Vaccination against the plague is being practiced on a large scale, and the government is considering the establishment of anti-plague vaccination stations throughout the city.

Hygiene of the Barber Shop.—The *Lancet* mentions that ten countries have adopted regulations for controlling barbers and hairdressers to prevent contagion. Among them are Japan, Sweden, the State of New York, Uruguay and San Salvador. It suggests, further, that as brushes are so hard to disinfect, the use of formalin is probably advisable. Powder puffs should be replaced by pieces of cotton, which can be burned after using. The barber should wear an apron without pockets, and should wash his hands between attending on customers. An important regulation which should be decreed is that no one suffering from an obvious disease of the scalp or face should be served in a public barber shop.

Australian Lepers.—Wherever possible the government of New South Wales deports Chinese lepers. There are now seven of these unfortunates in the leper lazarette at Little Bay and arrangements are being made to send them back to China. Victoria has one Chinese leper and the health authorities of the two states are arranging to send him to China with his countrymen from New South Wales. The patient has no objection to returning to China, but asks the government for £150 ($750) with which to start in business in Hongkong. In similar cases the Victorian government has made grants ranging from £60 to £120 ($300 to $600), as the repatriation of such cases even with a substantial gratuity means a saving to the treasury.

Suit Against a French Surgeon for Homicide.—Dr. J. A. Fort of Paris performed an operation on a patient for the relief of a stricture of the esophagus. The patient died a few days afterward. Eight months later the aid who had assisted at the operation denounced the surgeon as having caused the death of the patient by a piece of an instrument left during the intervention. The bulging tip of the thin, flexible sound he was using had been broken off by a spasmodic contraction of the stricture, but as the digestive tract tolerates readily much larger foreign bodies than this, he did not regard the incident as at all serious. The body was exhumed and during three hours' examination by three physicians besides Fort, nothing was discovered to show the slightest damage from the tip of the sound, which was found in the intestine. Nevertheless, the authorities have formally instituted suit against him for homicide by imprudence, as mentioned in an editorial on page 1150.

Present Status of Medical School Inspection in Germany.—A full report on this subject is published in the *Allg. med. Ct.-Ztg.*, September 17. In Dantsic the school inspectors are members of the board of education. The number includes 4 ophthalmologists and 12 physicians. The former examine the children's eyes on their entering school, and thereafter at two-year intervals. Charlottenburg has 12 medical inspectors. They make out a health chart for each child, which accompanies it from grade to grade. Each month the medical inspector holds a conference with the principal and the teacher of each grade, and the children are inspected at least once a quarter. The heating, cleaning and ventilating of the buildings are also under his jurisdiction. In Breslau the children are examined after they have had two or three months of school life. In Paderborn the demand for medical school inspectors was rejected by the city authorities on the ground that, as the state did not think them necessary for the higher institutions of learning, they were not needed in the lower grades. In Leipsic the regulations require the inspector to visit each school once a month to confer with the principal and examine such children as are presented to him. The inspectors are also required to accompany the architects and the board in their rounds of inspection of the school buildings. These Leipsic regulations are proving exceptionally satisfactory.

An Exposition of Irregular Methods.—The "Naturforscher" Congress is one of the events of the year in Germany. It is an annual gathering of physicians and workers in other sciences for the purpose of presenting and discussing the various achievements in science during the past twelve months. The medical section is always particularly interesting, and physicians flock from near and far, the total attendance at the congress reaching well up into the thousands. The seventy-sixth annual session was held at Breslau Sept. 18-24, and one of its features was an exhibition of the measures and practices of quacks and charlatans as encountered by medical men. Dr. Carl Alexander had the matter in charge, and several addresses were made by editors and physicians on the subject of quacks in general. The exhibition included the advertisements of all kinds of quacks and charlatans, as well as the advertisements of proprietary medicines and secret remedies, the various cure-alls "without poison" and "without the knife," faith cures and pseudo-science cures, the institutions conducted by "nature healers," their periodicals, books, etc., in short, the entire history of charlatanism during the last decades. An important feature of the exhibition was the statistics and data collected by physicians in regard to the persons practicing these irregular methods. They show that 70 per cent. had barely an elementary education. The literature is shown to be enormous; the principal organ of the German "nature healers" is in its thirty-second year and claims 125,000 subscribers. Dr. Reissig has collected data which prove that the number of books and treatises on "nature healing" sold during the past fifteen years amounts to a total of more than $3,000,000. More than a million copies of Bilz' book have been sold, and more than a quarter of a million of Kneipp's, not to mention Mrs. Eddy's book. Specimens of all of these were on exhibition. It is proposed to keep this collection together and throw it open to the public as a means of instructing the people in regard to quack practices and methods, using every means to render it more instructive in this respect. The effectual organization of the charlatans must be met by concerted action on the part of the profession. Lejars remarks in a letter on the subject in the last *Semaine Méd.*, that all the members of the profession do not suffer in the same degree from the ravages of quack practices, and consequently the physicians whose influence would be most powerful in the matter are the very ones who regard it with apathy and selfish indifference. The matter is so appallingly serious, however, he adds, that it threatens the very existence of the liberal, honest medical profession, and effectual organization to combat it is imperatively needed. The German Society for the Repression of Charlatanism was founded in 1902, and Holland has had a similar organization since 1880. The present exhibition is due to the initiative of the German society. Some of its previous efforts were mention on page 384 of the last volume of THE JOURNAL.

Correspondence.

State Supervision of Public and Private Care of the Insane.

EAST ST. LOUIS, ILL., Oct. 2, 1904.

To the Editor:—In your editorial, September 17, with the above title, your reference to Illinois institutions may admit of a little explanation. You speak of the "ruin" wrought and

their "fall" under the present system, as shown in articles in the *Illinois State Medical Journal*. I am aware that some such articles were published, but I believe the profession generally understands the animus and circumstances under which they were published. But when such reference to our charitable institutions is made in a journal of national circulation the matter assumes a different aspect.

Now, I am deeply interested in these institutions, am a visitor of them, and of similar institutions in other states, and if it can be pointed out to me in what particular, in any one of these institutions there is a defect, I will make an effort to remedy it. If any defects can be shown in the medical treatment of our insane, any want of efficiency or kindness on the part of nurses, any harsh treatment on the part of attendants, any lack of cleanliness or sanitary condition in the buildings or grounds; if, indeed, there is any point in any one of these institutions that will not compare favorably with any other institution for the insane in this country, I most earnestly want to know it.

I will gladly accompany you, Mr. Editor, or the former editor of the *Illinois State Medical Journal*, to any of these institutions you may select for this observation.

With reference to "the loss to the state of eminent medical men," I can recall but one change in superintendents during the present administration, that at Jacksonville, and that was certainly not for political reasons.

H. C. Fairbrother, M.D.,
Member State Board of Charities.

[We do not question the good faith of the author of this letter. As to the editorials in the *Illinois State Medical Journal*, we know nothing of their "animus" nor of the "circumstances" under which they were written. They appeared in the editorial columns of a highly respectable medical journal and, as we recall, they were warmly commended at the time by the leading Republican daily of Chicago, and were indorsed in the issue of The Journal, Feb. 20, 1904, because they seemed to us to show, without personality or partisanship, the evil effect of political influence on a body of institutions whose directing spirit should be purely that of medical science.

The writer of the above letter states that he has no knowledge of any defects in the Illinois institutions, but expresses an admirable willingness to remedy them if any can be shown to him. It would be no difficult task to do this. The subordination of the Illinois institutions to party politics has been so evident that it is now a public issue in the state, and neither party dared to frame a platform this year without a plank demanding a merit system for the appointments to these institutions. A powerful voluntary organization of representative men throughout the state has been formed for the express purpose of securing a state civil service law, and, as its reports will show, the primary need of this law was found in the condition of the state institutions. For the past eleven years, since the inauguration of the spoils system in 1893, at least 90 per cent. of the offices, over 2,500 in number, in the state charitable and penal institutions, have been used for the payment of political debts or the purchase of political power. This system has naturally resulted in a deterioration in the management of our institutions. At the present time, in at least nine cases out of ten, fitness and experience combined have no influence in obtaining a position even in the insane hospitals.

There is one respect in which the institutions of Illinois do not compare favorably with "other institutions for the insane in this country." There is no governing body whose members are appointed and hold office in a way that makes it a proper body to hear complaints and investigate charges. The State Board of Charities is appointed by the same head who appoints the superintendent and chief officers of the various institutions, and as a consequence they are naturally inclined in all investigations to shield the management rather than to protect the inmate. For specific instances we may point to the Kankakee investigation, to the Elgin investigation, and to the attempted investigation of the Illinois Industrial Home for the Blind. It is fair to say that the instances referred to occurred before Dr. Fairbrother's very recent appointment to the board. For details we refer him to the "Plea for a State Merit Law" published by the Illinois Civil Service Association. That Illinois has lost the good name she once boasted of is shown by the fact that a commission appointed a few years ago by the governor of Pennsylvania to visit the various state charitable institutions and report on the same, passed through Illinois, stating in a personal interview with the representatives of the press in Chicago that they could learn nothing from the Illinois state charitable institutions, as they were among the lowest in point of efficiency.

Our correspondent questions our assertion as to "the loss to the state of eminent medical men" and says he knows of but one change in superintendents in the "present administration." We can not state too emphatically that we intend no reflection on the "present administration" of Illinois or of any other state. The Journal does not lend itself to partisan politics, nor does it hold any one administration responsible for the general situation, but it has been repeatedly pointed out that political control of public medical charities under any administration always has been and always will be disastrous.

We are sorry to say that, unlike our correspondent, we are able to recall a considerable list of excellent alienists who by various "methods of elimination" have been removed from the service of Illinois since 1893, when the period of political control set in. Among these are a pathologist of national reputation, the successful heads of three large institutions in other states, the superintendent of another public insane asylum which is now among the most progressive in America, and others equally meritorious but less conspicuous.

We would remind our critic that the points mentioned in his letter are not the only ones in which we have a right to demand a high standard for our insane asylums. Let him compare the medical, surgical and laboratory work in the asylums of Illinois with that carried on now in New York, Minnesota, Michigan and Ohio—the actual volume of scientific, clinical and pathologic work as evidenced by publications in the current literature. Cleanliness and kind treatment are certainly necessary, but the twentieth century has advanced beyond these points, and so long as mechanical restraint still obtains in our asylums, so long as they still retain the "Utica crib," and so long as they fail to keep up with the march of modern psychiatry, so long shall we be justified in our criticism of them.—Editor.]

Copper Containers Not Sufficiently Germicidal to Typhoid Bacilli in Water.

Springfield, Ill., Oct. 5, 1904.

To the Editor:—According to newspaper reports of the latter part of August Dr. Edward Martin, director of public health and charities, Philadelphia, stood sponsor for the following statement: "Typhoid fever germs may be removed from water without boiling or filtering. It is only necessary to let water stand for four hours in a copper kettle in a living-room temperature or twenty-four hours in a refrigerator. The water will receive sufficient colloidal impregnation from the vessel to kill typhoid fever and cholera germs."

At about the same time the newspapers published an announcement that municipalities and communities suffering from or threatened with the presence of typhoid germs in drinking water were requested to call on the Secretary of Agriculture to render assistance; that the Department of Agriculture, after exhaustive investigations, had found a remedy for the destruction of typhoid bacilli in the simple retention of infected water in copper vessels.

Further, about September 5, Dr. George T. Moore of the Department of Agriculture was quoted as saying: "I am perfectly willing that the press should say for me that the death rate in any community from typhoid fever, so far as the disease is caused by infected drinking water, may be wiped out by the scientific use of copper as a germicide."

The wide publicity given to this subject by the press, and the simplicity, economy and alleged certainty of the process, caused serious apprehension on the part of the Illinois State Board of Health, lest local authorities of the state might advocate and adopt the method without further investigation, neglecting the more thoroughly tried and approved methods of the prevention of water-borne diseases. To determine the accuracy of the claims made, the State Board of Health immediately undertook a thorough and painstaking investigation of the germicidal powers of copper and its salts, under the direction of Prof. John H. Long, of Northwestern University.

These investigations have been completed and show conclusively that typhoid bacilli may live in water in copper containers or in water brought in contact with copper, at ordinary room temperature, not only for four hours, but for twenty-four or even forty-eight hours. According to Professor Long's report, "while in sterilized water in contact with copper, the 'death rate' of typhoid bacilli is high, their persistence for two or three days, and the possible persistence for longer periods in larger amounts of water, render the method impracticable for use in rendering a suspicious water safe for household use."

There is no question but that the contact of copper with water contaminated with typhoid bacilli brings about more rapid destruction of these bacilli, and some germicidal power must be admitted, but that this germicidal power can not be depended on, especially in the small space of time suggested in the newspaper reports, is made apparent by the persistence of the bacteria for over forty-eight hours under conditions in which this germicidal power is stated to be at its highest.

It is to be remembered that the disappearance of typhoid bacilli from water in a copper vessel, at the end of forty-eight hours, can not be entirely attributed to the germicidal action of the copper. Typhoid bacilli disappear from ordinary water in from one to ten days, and from Chicago tap water, they are, as a rule, entirely absent five days after seeding. Hence, the disappearance of the bacilli forty-eight hours after seeding, in a copper vessel, may be due, not only to the action of the copper, but to the natural destruction of the bacilli in water.

It must be further remembered that water which receives sufficient "colloidal impregnation" to destroy typhoid fever and cholera germs may receive also sufficient poisonous properties to render it unfit for drinking purposes. Be that as it may, there is no question but that the copper-lined canteen, advocated and said to be under consideration by the government for the uses of the Army, would be more deadly in its results than are the typhoid bacilli to-day. Lacking the germicidal properties to destroy the germs of water-borne diseases, they present merely an added danger from the contamination of the water from material of their own construction.

The "purification" of water by the destruction of bacterial poison through the addition of chemicals which may be in themselves poisonous, has ever been a theory untenable to the logical sanitarian or physician. The interest manifested in the earlier reports of this "copper kettle water purification" justifies the assumption that even greater interest will be shown in the results of accurate investigations determining the truth or error of the earlier theories or assertions.

J. A. EGAN.
Secretary Illinois State Board of Health.

Should the Appendix Be Removed When the Abdomen Is Opened for Other Conditions?

BALTIMORE, Oct. 4, 1904.

To the Editor:—I beg leave to make a slight correction in an admirable article by Dr. Floyd McRae in THE JOURNAL, Sept. 24, 1904, on "The Diagnosis of Appendicitis, Should the Appendix Be Removed When the Abdomen Is Opened for Other Conditions?" He writes as follows: "Kelly, in his classical work on gynecology, gives the opinion of a number of the leading surgeons and gynecologists in this question. Most of them were of the opinion that the removal of the appendix, unless markedly diseased, should not be a routine practice, the author agreeing with them." My remarks on this subject were published, not in my "Operative Gynecology," but in a paper entitled "Under What Circumstances Is It Advisable to Remove the Vermiform Appendix?" which appeared in THE JOURNAL of the American Medical Association, Oct. 25, 1902. The point in regard to which I asked for opinions was not "whether the appendix should be removed unless markedly diseased," but whether it should be removed when it deviated in the slightest degree from normal, my question being: "When the abdomen is opened for other causes and the perfectly normal appendix is easily accessible, is it your rule to remove it?"

HOWARD A. KELLY.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

ELIGIBILITY OF SECTARIANS TO COUNTY MEDICAL SOCIETIES.

MINNEAPOLIS, Sept. 25, 1904.

To the Editor:—I write to you in behalf of the board of censors of the Hennepin County Medical Society of Minneapolis, to ask you what has been the practice of societies in affiliation with the American Medical Association with regard to admitting homeopathic physicians into membership. We wish to ask especially: Are homeopathic physicians, if they practice "non-sectarian medicine," eligible for membership? Is there a precedent for receiving them? If so, what society affiliated with the American Medical Association has received such? If they are admitted can they still retain their positions as professors in homeopathic medical colleges, their appointments as visiting physicians on the homeopathic staffs of hospitals, and their memberships in homeopathic medical societies?

DAVID OWEN THOMAS.

ANSWER.—The members of a number of county medical societies have been more or less puzzled to find an answer to the question propounded in the above letter, namely, whether the new plan of organization commends, recommends or permits the reception into membership of sectarians. The provision governing this point as suggested in Article III of the "Standard Constitution for County Medical Societies" is as follows: "Every legally registered physician residing and practicing in ——— county, who is of good moral and professional standing and who does not support or practice, or claim to practice, any exclusive system of medicine, shall be eligible for membership." The difference between this and the earlier practice lies in the fact that the school of graduation and the former practice of an applicant for membership no longer act as a bar, provided that the applicant now fulfills the conditions laid down in the article quoted—that is, does not limit himself, either in his claims or in his practice, to any exclusive system. However, the autonomy of the county society is complete and it has full power to decide under exactly what conditions any individual applicant may be admitted. Those who have professed to practice an exclusive system in the past, but who now renounce such claims, are declared to be "eligible for membership," and it is recommended that they be admitted. No compulsion exists. There may be other reasons for refusing to accept such applicants; the county society must decide. Under the new order of things and by reason of the complete freedom of decision as to membership that rests with the county society, the practice of societies varies in different counties. A society in Ohio and another in Iowa received into membership all the irregulars in their respective counties. This may have been a permissible procedure and the result of the experiment is being watched with interest. Some difficulties have arisen in the effort to keep straight some of the former irregulars. On the other hand, some decided good has been accomplished. Sectarians who retain their claims, practices and college, society and hospital affiliations are not supposed to be eligible. It seems wisest to construe the statute with liberality when deciding an individual case. It may be better, in some instances, to admit than to reject one whose status is not perfectly clear, because the very admission, through its fellowship with men of high professional ideals, may prove the turning point of a career begun in error and continued for the lack of opportunity to retrace false steps taken in ignorance and innocence.

CONTRACT PRACTICE—AN EXPERIENCE.

A physician, who desires his name withheld, writes from Indian Territory regarding contract practice, endorsing the movement in

opposition thereto. He gives a view obtained from his own experience, which it would be well for others who have a desire to do such work to read: He says: "I have been much interested in the discussion of contract practice from time to time. I am a married man of 29 years, with both literary and medical degrees obtained in first-class institutions, after the prescribed course, and have had five years of practice. After graduation, on account of ill health and financial stress, I was compelled to accept a contract mining practice at this place. I am thoroughly disgusted with contract work, and have been from the start, but necessity demanded me to take it up. I would that your time would permit me to tell what I know of the work. It is the most humiliating, degrading and unsatisfactory work one could engage in. Once in it it is next to impossible to relinquish. I know many contract physicians in this section, but have never known one to voluntarily give it up. I started a movement to try to abolish it in this vicinity, but it met a dismal failure."

RECIPROCITY BETWEEN OHIO AND ILLINOIS.

PAULDING, OHIO, Oct. 7, 1904.

To the Editor:—Does the Illinois board recognize licenses from the Ohio board? G. E. BRATTAIN, M.D.

ANSWER.—Yes, in case of licenses issued on examination to graduates of recognized medical colleges. For further particulars consult Dr. J. A. Egan, secretary of the Illinois State Board of Health, Springfield, Ill.

Marriages.

REGINALD SMITH, M.D., New York City, to Miss Neva Scott, in Chicago, September 26.

FRED R. JEWETT, M.D., to Miss Emily Pryor, both of Cambridge, Mass., September 28.

MORTON E. CUMMINGS, M.D., to Miss Ida Sargent, both of Malden, Mass., September 28.

WILLIAM J. BUSSEY, M.D., to Miss Winifred Streeter, both of Sioux City, Iowa, October 1.

ISADORE J. WOLF, M.D., Kansas City, Mo., to Miss Leah Marks of Cincinnati, September 26.

HENRY S. PLUMMER, M. D., to Miss Daisy Louise Berkman, both of Rochester, Minn., October 6.

C. E. STEPHENSON, M.D., Portland, Ind., to Miss Blanche Miller of Decatur, Ind., September 28.

CHARLES A. DAWSON, M.D., to Miss Berenice Inez Potter, both of Glyndon, Minn., September 29.

WILLIAM M. NEWMAN, M.D., Spokane, Wash., to Miss Nellie Levens of Albert Lea, Minn., October 5.

L. B. CAMBREATH, M.D., Cambria, Iowa, to Miss Daisy May Wells of Keokuk, Iowa, September 28.

FRANK WALLACE SMITH, M.D., to Miss Sophie Vinal Bowden, both of York Village, Maine, October 1.

J. RANDOLPH GRAHAM, M.D., New York City, to Miss Bessie Knight Ward, at Winchester, Va., September 28.

ISAIAH BENNETT, M.D., to Miss Grace S. Pearson, both of Wilsonville, Neb., at Clayton, Mo., September 29.

FREDERICK WALTON, M.D., Plymouth, Pa., to Miss Mary Martha Weiler, of Flemington, N. J., September 28.

FREDERICK H. THOMPSON, M.D., Fitchburg, Mass., to Miss Katherine Livick of Roxbury, Mass., September 28.

CHARLES L. HARMER, M.D., Farmington, Mo., to Miss Goldie Alice Beach of Mount Vernon, Ohio, September 28.

DENNIS FRANCIS FITZPATRICK, M.D., to Miss Maurice Pauline Murphy, both of Iowa City, Iowa, September 28.

FERDINAND GEORGE BENN, M.D., Kulm, N. D., to Miss Elizabeth Helen Kane of Escanaba, Mich., at Long Prairie, Minn., September 29.

Deaths.

J. Merrick Bemis, M.D. Castleton (Vt.) Medical College, 1852, for many years assistant and superintendent of the Worcester Insane Hospital; physician in charge of Herbert Hall, Worcester; a member of the Massachusetts Medical Society, Worcester Medical Society, and American Medico-Psychological Association, died at his home in Worcester, October 3, from Bright's disease, aged 84.

Thomas Lincoln Axtell, M.D. Bellevue Hospital Medical College, New York City, 1881, a member of the Connecticut Medical Society and the Waterbury Medical Society, sometime surgeon to the Second Infantry, Conn. N. G., died at his home in Waterbury, Conn., from paralysis of the heart, September 26, aged 51.

T. James Owens, M.D. Bellevue Hospital Medical College, New York City, 1873, assistant commissioner of agriculture of New York, and a practitioner for many years in Steuben and Remsen, N. Y., died at his home in Utica, N. Y., September 28, after a lingering illness from diabetes, aged 57.

William J. Williams, M.D. Rush Medical College, Chicago, 1887, a member of the American Medical Association, one of the most prominent and beloved physicians of Dallas County, Iowa, who has been in declining health for several years, died at his home in Adel, Iowa, September 30, aged 50.

Samuel E. Freeman, M.D. College of Physicians and Surgeons in the City of New York, 1858, the fifth of that name in direct line to practice in Woodbridge, N. J., died at his home in that city, September 24, from apoplexy, after an illness of two months.

John W. Jones, M.D. Tulane University of Louisiana, New Orleans, 1861, for many years ordinary of Crawford County, Georgia, died at his home in Knoxville, September 30, from injuries received six days before in a runaway accident, aged 65.

Frederick Marshall, M.D. Harvard University Medical School, Boston, 1904, interne in the Boston City Hospital, was instantly killed by an explosion of dynamite under a trolley car on which he was riding, near Melrose, Mass., September 22.

David Decker Wickham, M.D. College of Medicine, Syracuse University, New York, 1875, the oldest practitioner in Orange County, died at his home in Port Jervis, N. Y., October 1, from pneumonia, after an illness of three weeks, aged 74.

Henry McDonnell, M.D. Tulane University of Louisiana, New Orleans, 1870, a member of the state and county medical societies, died at his home in Huntsville, Ala., October 2, after an illness of several weeks, from typhoid fever, aged 56.

Isaac MacBride, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1854, died at his home in Philadelphia October 2, as the result of injuries received in a fall from a trolley car two months before, aged 73.

John E. Hutton, M.D. Marion Sims College of Medicine, St. Louis, 1891, for several years demonstrator of anatomy in Barnes Medical College, St. Louis, died at his home in Mexico, Mo., September 30, aged 34.

Van B. Thornton, M.D. National Medical College, Washington, D. C., 1861, physician and health officer of the Prairie View State Normal and Industrial College, died recently at his home in Houston, Texas.

Leroy M. Taylor, M.D. University of Georgetown, Medical Department, 1860, a Confederate veteran, died at his home in Washington, D. C., September 27, from acute Bright's disease, aged 66.

James H. Gray, M.D. Chattanooga (Tenn.) Medical College, 1894, of Chattanooga, died at Grayville, Tenn., from disease of the stomach, after a long illness, September, 30, aged 49.

Jefferson F. Lytton, M.D. Kentucky School of Medicine, 1866, of Wheatland, Ind., was found dead in his buggy, three miles from Wheatland, October 2, from heart disease, aged 71.

Joseph Newton Johnston, M.D. Cooper Medical College, San Francisco, 1886, died at his home in San Jose, Cal., September 21, from tuberculosis, after a prolonged illness, aged 40.

Cicero D. Rounds, M.D. Michigan College of Medicine and Surgery, Detroit, 1894, died at his home in Detroit, September 25, after an illness of five months, aged 51.

Theodore Schults, M.D., the oldest physician of Evansville, Ind., died at his home in that city, September 30, after an invalidism of several years, aged 88.

William H. Moore, M.D. Tennessee Medical College, Knoxville, 1893, died at his home in Fountain City, Tenn., October 4, after a brief illness.

Reuben S. Myers, M.D. University of Vermont, Burlington, 1875, died at his home in Clarence Center, N. Y., September 30, aged 75.

Melvin W. Wilson, M.D. Castleton (Vt.) Medical College, 1852, died at his home in Oakland, Cal., September 27, aged 76.

William H. Knepple, M.D., died at his home in Wakarusa, Ind., September 27, from gallstone disease, aged 73.

Caleb C. Harris, M.D. Illinois 1878; died at his home in Dousman, Wis., September 24, from peritonitis, aged 60.

State Boards of Registration.

COMING EXAMINATIONS.

Board of Medical Examiners for the State of Texas (Regular), Dallas, October 18. Secretary, M. M. Smith, M.D., Austin.

State Board of Medical Examiners of New Jersey, Trenton, Tuesday, Tuesday evening and Wednesday, October 18-19. Secretary, E. L. B. Godfrey, M.D., Camden.

Louisiana State Board of Medical Examiners, New Orleans, October 21 22. Secretary, Felix A. Larue, M.D., New Orleans.

Board of Medical Examiners of the State of California, San Francisco, October 25. Secretary, Charles L. Tisdale, M.D., Alameda.

Nebraska State Board of Health, November 9-10. State House, Lincoln. Secretary, George H. Brash, M.D., Beatrice.

College Entrance Supervision in Indiana.—The secretary of the Indiana State Board of Medical Registration and Examination has notified the secretaries of the various medical colleges of the state that all documentary evidence of preliminary education offered by freshmen entering the college must be submitted to the board for approval. This relieves the colleges of the responsibility of accepting or rejecting students on educational grounds and insures a uniform standard of education for all students. It is urged that a thorough preliminary education should be insisted on for all students entering medical colleges because, while it does not mean that it will make them more successful as practitioners, it at least enables them to study medicine understandingly.

The Public Service.

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, for the week ending Oct. 8, 1904:

Billingslea, C. C., asst.-surgeon, ordered to proceed not later than Nov. 1, 1904, from U. S. General Hospital to Presidio of Monterey, and accompany troops to Fort Riley, Kan., and report to the commanding officer of that post for duty.

Keller, W. L., asst.-surgeon, relieved at Fort Riley, Kan., and ordered to proceed not later than Oct. 12, 1904, to Fort Leavenworth, Kan., to accompany troops to Presidio of San Francisco, and report to the commanding general, Department of California, for assignment to duty at the U. S. Army General Hospital, Presidio of San Francisco.

Smart, Robert, asst.-surgeon, now at San Francisco, is relieved from duty in the Philippine Division and will accompany troops from the Presidio of San Francisco to Jefferson Barracks, Mo. On completion of this duty will proceed to Fort Du Pont, Del., and report to the commanding officer of that post for duty.

Fuller, L. A., asst.-surgeon, granted twenty days' leave of absence.

Winter, F. A., surgeon, granted leave of absence for twenty days from Oct. 10, 1904.

Smart, Charles, asst.-surgeon general, arrived at Army and Navy General Hospital, Hot Springs, Ark., for treatment.

Reagles, James, contract surgeon, ordered from Fort Keogh, Mont., to Fort Yellowstone, Wyoming, for temporary duty.

Sievers, Robert E., contract surgeon, ordered from Fort Harrison, Mont., to Fort Assiniboine, Mont., for temporary duty.

Koyle, Fred T., contract surgeon, relieved from duty at Fort Brown, Texas, and ordered to duty at Fort Bliss, Texas.

Burr, Rollin T., contract surgeon, left Fort Rodman, Mass., October 4, on leave of absence for three months, which he will pass at Pomona, Cal.

Mabry, William C., contract surgeon, returned to duty October 3 at Fort Sheridan, Ill., from leave of absence.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending Oct. 8, 1904:

Steele, John M., surgeon, ordered to the Naval Station, Baltimore.

Ledbetter, R. E., P. A. surgeon, commissioned P. A. surgeon, with rank of lieutenant, from Oct. 19, 1903.

Iden, J. H., P. A. surgeon, commissioned P. A. surgeon, with rank of lieutenant, from May 4, 1904.

Seaman, W., Richardson, R. R., and Asserson, F. A., commissioned P. A. surgeons, with rank of lieutenant, from May 18, 1904.

Balch, A. W., P. A. surgeon, commissioned P. A. surgeon, with rank of lieutenant, from June 22, 1904.

Sutton, R. L., asst.-surgeon, ordered to the Naval Hospital, New York.

McDonell, W. N., asst.-surgeon, ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C.

Stitt, C. E., Smith, H. W., and Clifford, A. B., asst.-surgeons, appointed asst. surgeons, with rank of lieutenant (junior grade), from Sept. 27, 1904.

Stitt, C. E., asst.-surgeon, ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C.

Carpenter, D. N., surgeon, ordered to the Naval Hospital, New York.

Orvis, R. T., P. A. surgeon, detached from the Naval Hospital, New York, October 4, and ordered to the *Chattanooga*.

Richardson, R. R., P. A. surgeon, detached from the *Wabash* and ordered to the Navy Yard, Mare Island, Cal.

Dunn, H. A., asst.-surgeon, detached from the Naval Proving Ground, Indian Head, Md., and ordered to the Naval Hospital, Newport, R. I.

Judd, H. W., A. A. surgeon, ordered to the Naval Proving Ground, Indian Head, Md.

Public Health and Marine-Hospital Service.

List of the changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service, for the seven days ending Oct. 5, 1904:

Banks, C. E., surgeon, granted extension of leave of absence for twelve days from September 27.

Richardson, T. F., P. A. surgeon, to proceed to Eagle Pass, Texas, for special temporary duty.

Trotter, F. E., P. A. surgeon, relieved from duty at Plague Laboratory, San Francisco, and temporarily assigned to exclusive duty in connection with the examination of aliens at San Francisco.

Lord, C. E. D., asst.-surgeon, relieved from duty in connection with the exclusive examination of aliens at San Francisco and directed to proceed to Mare Island, New York, and report to Surgeon G. W. Stoner for temporary duty.

Boggess, J. S., asst.-surgeon, granted leave of absence for fifteen days from October 16.

Rucker, W. C., asst.-surgeon, Bureau letter of September 12, granting fourteen days' leave of absence from September 15, amended so that said leave shall be effective September 16; and Bureau telegram of September 26, granting three days' extension of leave of absence, revoked.

Collins, G. L., asst.-surgeon, granted leave of absence for three days from Sept. 30, 1904, under Paragraph 191 of the Regulations.

Tuttle, Jay, A. A. surgeon, granted leave of absence for four days from September 19.

Winn, C. K., A. A. surgeon, granted leave of absence for fourteen days from September 25.

McDonald, Jeanette, medical inspectress, granted leave of absence for three days from Sept. 25, 1904, under Paragraph 210 of the Regulations.

LaGrange, J. V., pharmacist, granted leave of absence for seven days from Sept. 26, 1904, under Paragraph 210 of the Regulations.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended Oct. 7, 1904:

SMALLPOX—UNITED STATES.

Illinois: Chicago, Sept. 25-Oct. 1, 3 cases, 1 death.
Louisiana: New Orleans, Sept. 25-Oct. 1, 1 case.
Massachusetts: Sept. 25-Oct. 1, Fitchburg, 1 case, 1 death; North Adams, 2 cases.
New York: Buffalo, Sept. 25-Oct. 1, 1 case.
Ohio: Cincinnati, Sept. 23-30, 1 case.
Pennsylvania: Philadelphia, Sept. 25-Oct. 1, 1 case.
Tennessee: Nashville, Sept. 25-Oct. 1, 2 cases.
Wisconsin: Milwaukee, Sept. 25-Oct. 1, 1 case.

SMALLPOX—FOREIGN.

Brazil: Bahia, Aug. 27-Sept. 3, 1 death.
France: Paris, Sept. 10-17, 16 cases.
Great Britain: Glasgow, Sept. 16-23, 1 case, 1 death; Sept. 10-17, London, 1 case; Manchester, 7 cases; Newcastle-on-Tyne, 6 cases.
Italy: Palermo, Sept. 10-17, 17 cases, 1 death.
Mexico: City of Mexico, Sept. 3-17, 7 cases, 4 deaths.
Russia: Moscow, Sept. 3-10, 4 cases, 1 death; Warsaw, Aug. 6-13, 23 deaths.
Turkey: Beirut, Sept. 10-17, present; Constantinople, Sept. 11-18, 22 deaths.
Venezuela: La Guayra, Sept. 10-17, present.

YELLOW FEVER.

Mexico: Tehauntepec, Sept. 18-24, 2 cases, 2 deaths.
Venezuela: La Guayra, Sept. 17, present.

CHOLERA.

India: Bombay, Aug. 31-Sept. 6, 18 deaths.
Turkey: Bagdad and vicinity, July 31-Aug. 20, 423 cases, 392 deaths.

PLAGUE.

Africa: Cape Colony, Aug. 20-27, 3 cases, 1 death; Tringa (German East Africa), Jan.-March, 47 cases, 41 deaths.
Brazil: Bahia, Aug. 27-Sept. 3, 6 deaths, verified.
Chile: Arica, Sept. 3, present.
Egypt: Aug. 26-Sept. 2, Achmun, 1 case, 1 death; Alexandria, 5 cases, 3 deaths.
India: Bombay, Aug. 31-Sept. 6, 51 cases; Karachi, Aug. 28-Sept. 4, 5 cases, 4 deaths.
Peru: Aug. 27-Sept. 3, Callao, 1 case; Chiclayo, 2 cases, 1 death; Eten, 3 cases, 2 deaths; San Pedro, 3 cases, 3 deaths; Lima, Aug. 20-Sept. 3, 13 cases, 4 deaths.
Turkey: Smyrna, Sept. 5-7, 2 cases.

Medical Organization.

Ohio.

WAYNE COUNTY MEDICAL SOCIETY.—Physicians of Wayne County met with Dr. T. Clark Miller, Massillon, councilor for the Sixth District, at Wooster, September 15, and reorganized the county society on the standard plan, electing the following officers: Dr. Hugh A. Hart, Wooster, president; Dr. Henry L. Blankenhorn, Orville, secretary, Dr. George W. Ryall, Wooster, treasurer, and Drs. John W. Irvin, Creston, and the secretary and treasurer, committee on revision of by-laws.

Pennsylvania.

ORGANIZATION IN PENNSYLVANIA.—It is a privilege for any one interested in a progressive medical profession to attend a meeting of the Medical Society of the State of Pennsylvania.

The meeting at Pittsburg last month was hardly up to the average in attendance, as the location was not central, but the program was an unusually interesting one and the spirit was fine. (A report of the meeting will be found under society proceedings. The officers elected were named October 8, page 1071).

Although young in point of years when compared with New Jersey, Rhode Island or Massachusetts, the membership of this society is the second largest in the country. In personnel, professional zeal and scientific work it also ranks deservedly high. For these reasons, and this has been especially noticeable since the creation of a House of Delegates in the American Medical Association, its representatives exert a great and conservative influence in the councils of the national body. Its delegates are selected with commendable care, and in everything one gets the impression that veterans are at the helm.

Some of the leading members are a little sensitive over the frequent criticisms that the society is not organized on the model plan, and this is not unnatural when the earnest efforts which have been made in this direction are understood. The county society has always been the unit of organization here, with practical coincident membership in the state society, and the total membership is 4,025. Of 67 counties 59 are well organized, nearly all of them years ago, and 2 are now in process of organization. The others are in the sparsely settled oil and mineral regions, and most of the physicians in them hold their membership in adjacent counties.

The reorganization movement started while Dr. Keen was president of the American Medical Association and Pennsylvania was one of the first states to take favorable action in this direction. Before the model constitution and by-laws were completed, a committee reported and the society adopted a plan of organization which was thought by all to be in perfect accord with the Association ideas. In fact, with county societies and coincident membership in the state society long established, it seemed that little remained to be done except to form a separate legislative body for the transaction of routine business, called here "the Judicial Council," but corresponding to the House of Delegates of the Association; and an executive committee of this body, called here "the Board of Trustees," and corresponding to our council. Of course, the difference in name is of little or no importance, but the provisions relating to the makeup of these bodies here are indefinite and confusing. As many of the members thought they had adopted and were working under the Association plan the latter has been held responsible, to some extent, for these unsatisfactory conditions.

At the meeting at York in 1903 a strong committee was appointed to report what changes were needed, if any, to adapt the new constitution and by-laws to the present needs of the society, and the model plan was offered and referred to it. The committee reported progress at Pittsburg and was continued for another year. As to whether the inequalities of the existing plan can best be cured by amendments or the uniform plan adapted to their needs, presents a practical problem which this committee will work out. The Association plan would relieve the confusion in the legislative body at the annual meetings by giving a more definite and uniform representation from the county societies, and, through its council, more assistance to, and better organization of, these local societies, but the disadvantage of frequent changes in plans and methods has also to be considered. In any event, it may be expected that this society will practically have the plans and lead in all the best things for which the Association stands, in the future as in the past.

Under the impetus of the organization movement, in spite of the difficulties indicated and generally recognized, much gain has already been made in this state. Largely owing to the coincident membership feature of their old plan, an unusually full per cent. of the profession was already enrolled. Still the net gain since 1902 has been 623. This gain has been as marked in Philadelphia as in the county districts, and is expected to increase even more there under the systematic efforts which are being made. The councilor feature of the Association plan would be especially helpful here, and, because of the good work already done, would soon give Pennsylvania the most perfect organization in the union in every respect.

The following officers were elected: President, Adolph Koenig, Pittsburg; vice-presidents, E. V. Swing, Coatesville; W. S. Stewart, Wilkesbarre; John Carson, Chatham Run, and J. B. Ewing, Fayette; secretary and editor of the *State Journal*, Cyrus L. Stevens, Athens; treasurer, George W. Wagoner, Johnstown; trustees, Henry Beates, Jr., Philadelphia; L. B. Kline, Catawissa, and William H. Hartgell, Allentown; delegates to the American Medical Association, H. S. McConnell, New Brighton; John B. Roberts, Philadelphia; William L. Rodman, Philadelphia, and F. W. Frankhauser, Reading.

Virginia.

Augusta County Medical Society.—This society met at Staunton, September 21, and reorganized on the standard plan. All but 8 of the 42 physicians in the county are members of the society. The following officers were elected: Dr. Joseph S. De Jarnette, Staunton, president; Drs. Marshall P. Jones, Churchville, Albert C. Fox, Waynesboro, and Walter S. Whitmore, Mount Sidney, vice-presidents; Dr. John W. Freed, Hermitage, secretary; Dr. Thomas M. Parkins, Staunton, treasurer, and Drs. John B. Tuttle, Spottswood, John B. Catlett, Staunton, and Benjamin Blackford, Staunton, censors.

Washington.

Lewis County Medical Society.—Lewis County physicians met at Centralia recently and organized a society on the standard plan, with Dr. John T. Coleman, Chehalis, president; Dr. Harding, Pe Ell, secretary, and Dr. Thomas Primmer, Centralia, treasurer.

Society Proceedings.

COMING MEETINGS.

American Medical Association, Portland, Ore., July 11-14, 1905.

New York State Medical Association, New York, October 17-20.
Medical Society of Virginia, Richmond, October 18-21.
Hawaiian Territorial Medical Society, Honolulu, November 5.
Oklahoma State Medical Association, Oklahoma City, November 9.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-fourth Annual Meeting, held at Pittsburg, Sept. 26 to 29, 1904.

The President, Dr. William B. Ulrich, Chester, in the chair.

Addresses of welcome were made by Mr. J. A. Blair, on behalf of the city; Dr. T. M. T. McKennan, president of the Allegheny County Medical Society, on behalf of that society, and William J. Holland, Ph.D., LL.D., curator of the museum of the Carnegie Institute.

Dr. Philip Marvel of Atlantic City, N. J., delegate from the New Jersey County Medical Society, made a few remarks on the work of that society, the oldest in the United States.

Reports of Committees.

At the executive council session, the reports of the various officers and committees were received, including the secretary's report, which showed at the present time 59 county societies, five having been established within the past year, with an aggregate membership of 4,025, a net gain of 360 during the past year; and the report of the State Board of Medical Examiners, giving in detail the results of the two examinations for licenses to practice held during the year.

The election of officers has been already mentioned on page 1071, October 8, and a report on the organization aspects of the meeting appears elsewhere in this issue.

At the afternoon session the addresses in medicine, surgery and hygiene were read.

Qualifications of the Practitioner.

The address on medicine, on this subject, was delivered by Dr. Henry Beates, Jr., of Philadelphia. He stated that medicine was essentially the consequence of cause and effect, and that the highest physical and mental health and character were necessary to a physician in order that he might properly execute the bond of trust existing between himself and his patient. He dwelt on the detrimental effect of the spirit of commercialism which to some extent is invading the ranks of the professions, as well as the electropaths, osteopaths, etc., and urged the necessity for the education of the laity to the value of consulting only a qualified practitioner. He urged the neces-

sity for the better fundamental education of the medical student before he be allowed to matriculate at colleges, and that only those should be permitted to enter who possessed the required preliminary education.

Malpractice Suits.

The address in surgery, on this subject, was delivered by Dr. Winters D. Hamaker, Meadville, in which he dwelt particularly on the disadvantages of the physician when sued for malpractice, assigning as reasons: 1. His prosecutor is in nearly all cases without property, and the juries know that the counties must pay the costs if the suit fails. 2. In many of the cases the poor results have been brought about by neglect or disobedience on the part of the patient or his friends. 3. Before a jury a case may be made out worse than it really is or can be "made up" entirely. 4. Courts will not allow an examination under an anesthetic in order to make a complete diagnosis. 5. The profession has devised no system of common defense. 6. The juries are ignorant of the subjects discussed. 7. So-called experts, very often ignoramuses, are brought in to testify against the defendant. 8. The impossibility of obtaining good results in many cases of severe injury.

He urged that the surgeon in complicated cases should have frequent consultation or *x*-ray examinations, and insist on strict obedience from the patient. He referred to the insurance companies which had been formed to defend physicians from such attacks, and recommended that the society appoint a committee to investigate this matter, as well as to consider the advisability of attempting to secure more favorable legislation.

Hygiene and State Medicine.

The address on this subject was read by Dr. Alexander Abbott of Philadelphia. He stated that the subject should include nuisances and places which under improper care might become such, the compilation of vital statistics, the management of contagious diseases and the establishment of hospitals for the reception, as well as maritime and, when necessary, inland quarantine. He referred to the fact that the statistics showed larger mortality rates in contagious diseases than those of the rural districts, because therein illness, death and interment could take place without any record being made thereof. He especially urged the value of vital statistics of the regions from which the water and milk supplies of cities are obtained, and the prevention of the deposit of human waste in channels which would lead to the water supply. He believed the examination of the physicians for a license should be less theoretical and more practical. He particularly commented on the value of vaccination, giving detailed statistics of the recent Philadelphia epidemic.

The Need for Systematic Study of Individual Characteristics as Manifested by the Organisms' Reaction to Sensory Stimuli.

DR. WALKER, Dixmont, urged the importance of the individual study of each case, particularly the chemical and physical phenomena of nutrition and the vasomotor and secretory conditions.

The Physicians and the State.

This paper, by Dr. Benjamin Lee of Philadelphia, was read by Dr. Eugene E. Matson, Pittsburg. It called attention to the duties of the man entering the medical profession to his fellow citizens and the state, particularly his duty to have a cultivated mind, thoroughly trained in all the branches of the medical art. It also commented on his duty to the state in the compilation of vital statistics and in notifying the health authorities of contagious diseases. The paper stated the belief that it was the duty of every physician offered a place on the board of health to accept.

Personal Recollections of Drs. John L. and Washington L. Atlee.

DR. B. H. DETWILER, Williamsport, reviewed the life and work of these men, referring particularly to the introduction of ovariotomy by Dr. Washington L. Atlee.

DR. S. P. HEILMAN of Heilmandale referred to the remarkable vitality of Dr. John L. Atlee, at the age of 81 years, at which time he had performed an operation for him.

Indicanuria Complicating Typhoid Fever.

DR. JUDSON DALAND, Philadelphia, after going into the technic of the analysis for this substance, gave in detail the diet and treatment employed therefor, and expressed the belief that the condition was frequently present in these cases.

Remarks on Some New Clinical Methods.

DR. H. E. WETHERILL, Philadelphia, described a centrifuge in which the speed is attained by means of a twisted cord, and an instrument for measuring the perspiration.

The first session of Section A was called to order Wednesday by the president of the state society, Dr. William B. Ulrich, Chester, and was then presided over by Dr. M. V. Ball.

Drugs Vs. Other Methods of Treatment.

DR. T. W. GRAYSON, Pittsburg, referred to the present tendency among physicians to give greater attention to the use of diet, electricity, massage and hygienic measures generally, and not to depend so exclusively as formerly on drugs alone. This is shown by the text-books and by the fact that much besides drugs has been used in the treatment of tuberculosis, gastro-intestinal diseases, malaria, rheumatism and typhoid fever. He did not wish to be termed a "therapeutic nihilist," but emphasized the fact that, though a certain drug may sometimes meet the condition, a better remedy is found in the use of hygienic measures which may be much harder for the physician to find and more troublesome for the patient to use than a bottle of medicine or a few tablets.

DISCUSSION.

DR. JAMES TYSON referred to the subject of polypharmacy and cited an instance of a prescription containing six different ingredients, and in which two capsules were necessary for a dose.

DR. BOYCE, Pittsburg, believed that no true physician would be ignorant of what may be done by diet, exercise and physio-medical measures, yet these could not be employed with the physiologic effect as could drugs. However valuable physical means might be, he would be sorry to see them put into the hands of men ignorant of the use of morphia, digitalis, and the drugs for treating symptoms.

DR. DILLER, Pittsburg, said that there should be obtained the true proportions between the relative value of hygienic measures and drugs and that there ought not to be any controversy between mechanical means and the use of drugs. He believed that polypharmacy was decreasing and was surprised that Dr. Tyson was able to cite such a remarkable case.

Asthma; Its Varieties and Their Treatment.

DR. S. SOLIS COHEN, Philadelphia, said that no condition exhibits so many indiviual peculiarities as asthma, which condition he declared to be a group of symptoms and not an independent disease. The underlying affection must be discovered before the diagnosis can be complete. In the presence of definite lesions in the heart and kidneys and so-called cardiac and uremic asthma supervene, the condition is not usually pure asthma, but dyspnea dependent on heart failure—sometimes, it is true, aggravated by the presence of uremic toxins. True asthma presents clinically four varieties: 1, Asthma dependent on vasomotor ataxia; 2, asthma dependent on bronchial spasm, muscular, and, perhaps, vascular; 3, asthma associated with chronic bronchitis and emphysema; 4, asthma associated with nasal turgescence and sometimes with polypi and other mechanical obstructions, or with enlarged glands and other sources of irritation in the nose and nasopharynx. These are not pathologic divisions, and are not co-ordinate, but permit useful working rules for practice.

In treatment, asthma dependent on vasomotor ataxia is to be prevented by constitutional measures and the administration of remedies which raise vascular tone. For the relief of the paroxysm he suggests the use of suprarenal spray or in-

halation, or, if necessary, hypodermic injection. The local application of suprarenal is especially useful in the nasal variety and any mechanical obstruction should be removed. Spasmodic asthma is to be prevented by avoidance of exciting causes and by the use of such agents as the nitrites. In cases associated with emphysema and chronic bronchitis, treatment with iodid of potassium during the intervals is especially useful. Especially useful is exhalation in rarefied air, and, when emphysema is not too excessive, this may be useful by combining with inhalations of compressed air. In this, as in all other measures of treatment, physical individualization is needed.

Dr. James Tyson believed that the use of the term asthma had become exceedingly careless, and said that the so-called pneumonic asthma is the result of a weak heart which has become dilated and unable to push the blood through the lungs; in the effort to get more air, there is edema of the lungs and sometimes consolidation. The application of the term asthma, therefore, to bronchial asthma is really speaking no more correct than the extension of it to the so-called uremic asthma. Dr. Tyson is apt to prescribe in the condition more commonly known as asthma, the iodids and belladonna, and with surprising success.

Dr. G. Hudson Makuen cited a case of nasopharyngeal irritation as a cause of asthmatic breathing, which was cured by operation.

The Diagnosis of Major Hysteria.

Dr. Theodore Diller, Pittsburg, read this paper, and emphasized the diagnostic importance of the condition. Failures in recognition of the condition he attributed to the too limited conceptions of its manifestations, a too great insistence on crying or laughing spells or convulsions as expressions of the affection, the failure to recognize that the symptoms may change little and persist for years, and that the disease may be thoroughly chronic and the failure to recognize the great diagnostic value of sensory changes. A clear recognition of hysteria and a positive statement to patient and friends that the disease is well understood constitutes the first step in treatment.

DISCUSSION.

Dr. S. Solis Cohen referred to two great errors on the part of physicians in the treatment of hysteria: Vague diagnosis and an air of mystery which is maintained in even recognized cases. He agreed emphatically with Dr. Diller that a definite statement, even if incorrect, is better for the patient, for the family and for the physician than to allow the patient to consider himself the subject of some mysterious ailment, perhaps of some supernaturally inflicted visitation. Dr. Cohen, further, called attention to the importance of the better recognition of traumatic hysteria. He thought many physicians were to blame for their testimony in court tending to belittle the condition brought about.

Dr. C. C. Hersman cited several cases of hysteria incorrectly diagnosed, and followed by consequent fatal results.

Dr. J. M. Fisher, Philadelphia, emphasized the importance of certain gynecologic conditions which often bring about the symptom complex recognized as hysteria. Illustrative cases were cited which had been cured by the correction of disturbances of the pelvic organs.

Dr. Mayer, Pittsburg, agreed with Dr. Diller that hysteria is a mental disease akin to insanity, and believed that physicians are prone to forget that the hysterical symptoms are due to a primary mental condition, that there is a congenital psychosis inherited in the individual.

Amnesia.

Dr. C. C. Hersman, Pittsburg, reported the following clinical case: A man, aged 40, left his home in 1892 without cause. He thought he was going to the Atlantic coast, but went to Cleveland, returning in four days, when he wanted to start for his home in Austria. He was treated in a hospital for two weeks and at his home for three or four weeks, with complete recovery. In 1903 he left the city, not knowing where he went. Does not know where he first came to himself. He left Boston for Jamaica. He was under different names, which condition he thought was imperative. He felt as though he were undergoing a transformation, and a part of the time thought he was dead. He returned in six months, placed himself under treatment, and again made a complete recovery.

Lax Sanitation; the Cost of It.

Dr. S. P. Heilman, Heilmandale, made a plea for a more united effort to secure legislation which shall prevent laxity in applying those sanitary precautions and safeguards to which the public is entitled. As a representative of the Society of the Associated Health Authorities and Sanitarians of Pennsylvania, he referred to two propositions made at the last annual meeting: 1. That the Medical Society of the State of Pennsylvania should be asked, with other societies, to unite in drafting a bill for the registration of vital statistics of the state. 2. That the society shall lend its influence to the enactment of law which shall provide for a county health officer and a deputy township health officer, who shall be under the instruction and direction of the State Board of Health, to supervise sanitary affairs of every township, independent of any local influence. Statistics were quoted showing the enormous pecuniary loss to New York and Pennsylvania in the last year from preventable diseases.

DISCUSSION.

Dr. Cohen said that the public needed to be told such facts as had been stated, and suggested the advisability of such papers being read often where they could be heard by those who needed to be informed on such matters. What the physician needed to know was, what can he do toward the enforcement of proper legislation? With that knowledge given him, he personally was willing to do what he could.

The paper was also discussed by Drs. W. J. Campbell, Huntington; McKinley, Somerset; Erdman, Lehigh, and Bishop, who were all heartily in accord with Dr. Heilman.

(To be continued.)

Travel Notes.

XII.

AUSTRALIA.

ITS CLIMATE, DISEASES, PEOPLE, NATIVES, SYDNEY, HOSPITALS, MEDICAL PROFESSION.

NICHOLAS SENN, M.D.
CHICAGO.

ADELAIDE, AUSTRALIA, August 11, 1904.

The voyage from Auckland to Sydney takes four days. The first two days we encountered a strong northwesterly gale which, on shifting to southwest, brought with it the cold breath of the south polar region. Sailing in a southwestern direction the cold gradually increased until we entered the magnificent harbor of Sydney, Saturday evening, July 30. It was soon after leaving Auckland that it became apparent that we were in the vicinity of an entirely new world, with strange animals, trees, plants and flowers by the appearance of a rare and strange bird—the albatross. About half a dozen of these giant sea-gulls accompanied us from coast to coast, but carefuly avoided the harbors. It is a magnificent bird with snow-white body, yellow straight bill, the upper part of which at its distal end is bulbous and its tip sharply curved downward, overlapping the lower; the enormous wings, measuring from tip to tip from eight to twelve feet, are white underneath, and the upper surface brown with the exception of its inner fourth, which is also white. These birds live on the waste material which is thrown overboard by the passing vessels. They fly with and against the wind nearly with the same velocity and with very little effort on their part, three or four strokes of their immense wings sufficing to start their graceful sailing movements, and by poising their body and wings in proper attitude they ascend, descend and make all kinds of curves

and circles with very little if any effort until a few active movements of the wings again become necessary to keep up the necessary momentum. They are very fast flyers and multiply many times the distance made by the steamer in their ceaseless to-and-fro flights in search for the very irregular and often scanty food supply. Many people are still under the erroneous belief that Australia is an island, and few, indeed, have a correct conception of the magnitude of this great continent which probably emerged from the bosom of the Pacific Ocean before the other continents saw daylight. It is nearly as large as the United States, inclusive of Alaska. Australia was first discovered by the Dutch and Spaniards in 1601-1606, and Captain Cook visited it in 1770, entering Botany Bay, near where Sydney is now located, April 28, where he landed and took possession in the name of King George III. For a long time England used it as a penal colony. There is perhaps no other country that presents to the stranger more characteristic features than Australia. Many things are the reverse to those who live north of the equator. When we have summer it is winter here. The tropical part of Australia is in the north and the frosts and occasionally a flurry of snow in the south. The crescent of the moon appears to us turned around. The animals are strange. It is the home of the strangest of all known animals, the duck-bill platypus (*Ornithorhynchus paradoxus*), which forms the connecting link between quadrupeds and birds. It is about two feet in length, has a flat black bill, webbed feet and body covered with a brown, silky fur skin like a beaver; it lays eggs and supplies the young with milk from its breasts. Australia is also the land where the giant emu (*Dromæus novæ-hollandiæ*) lives, a bird with only rudimentary wings and in size as large as the ostrich of Africa. Among the other strange animals there are the kangaroo, the wallaby, the kangaroo rat, flying fox, blind snakes and a small species of bear not larger than a guinea-pig, and the cassoway, a turkey as large as the emu, and more than sixty varieties of parrots. The vegetable kingdom is characterized by its great variety. The vast forests are composed of eucalyptus trees which are evergreen, but instead shed their bark annually; 400 species of this tree have been described; more than 10,000 of its indigenous plants have been classified. The great variety of the fauna and flora of Australia alone should be a sufficient inducement for all those who take interest in natural history to visit this land so full of Nature's strangest productions, all of which seem to point to the great age of this part of the world.

THE KANGAROO.

The kangaroo is a striking freak of Australia's fauna. For the purpose of increasing its speed, its only defense, Nature has supplied this animal with a fifth leg in the form of a long and powerful tail. Shorten the ears of one of our jack-rabbits one-half, lengthen the hind legs four times and add the tail of a kangaroo and it would be converted into a kangaroo on a small scale. This animal has a special interest for the surgeon, as the numerous delicate tendons of its tail have supplied a good substitute for catgut as a suturing and ligature material. For more than twenty years my friend, Dr. H. O. Marcy of Boston, has expounded the virtues, advantages and use of the kangaroo tendon in surgery, and through his influence it has become a very popular substitute for catgut in the practice of many American surgeons. I was somewhat astonished to find that American surgeons entertain a more favorable view of the utility of the kangaroo tendon than their Australian colleagues. Some of the latter never use it, some occasionally, and very few, if any, use it exclusively. It will interest the devotees of the kangaroo tendon ligature and suture to know that what they have been using is, as a rule, not the tendon of the kangaroo, but of the different species of wallaby. The kangaroo tendon is very coarse, at least the size of an old-fashioned knitting needle, altogether too large for general use. The wallaby is a very much smaller animal of the kangaroo family and yields a much finer material. There are three large species of kangaroo—the red kangaroo (*Macropus rufus*), the great gray kangaroo (*Macropus giganteus*), Bennett's tree kangaroo (*Dentrolagus Bennettianus*). The wallabys that furnish the tendon supply are represented by Parry's wallaby (*Macropus Parrei*), agile wallaby (*Macropus agilis*), brush-tailed rock wallaby (*Petrogale penicillate*), black wallaby (*Macropus robustus*). The rat kangaroo has a tail like a kangaroo and its fine, extremely delicate tendons, I am informed, have been used by some ophthalmic surgeons. The real kangaroo has become quite rare, as their skins are valuable and the price paid to market hunters was a sufficient inducement for them to carry on a war of extermination. For the same reason the wallabys have also become much less numerous. These animals are now protected during certain seasons of the year, which will, it is to be hoped, prevent them sharing the same fate that we meted out to our buffalo. The tendons are obtained by divesting the tail of its skin, cutting off its tip, grasping each tendon with forceps and extracting it with a jerk. The proximal end of the evulsed tendon is a little larger and more flattened than its distal end.

CLIMATE.

The Australian has a wide range from which to make a selection of climate, as it is influenced by latitude, elevation and distance from the coast. Floods and drought are the bad things which have seriously interfered with the continuous prosperity of the country, and they likewise have a decided influence on the climate. The northern part of Australia is tropical and has a tropical climate, and the vast forests secure for that section of the country an abundant rainfall and a luxurious vegetation. In the vast dry plains of the interior the heat during the summer months is intense; here the thermometer has been known to register as high as 140 degrees F. The Australian Alps consist of a range of mountains in the southeastern part of the country called Warragong by the natives. The highest peak is Mt. Kosciusko, which rises to an elevation of 7,176 feet. This forest-clad mountain range has a decided influence on the climate of the surrounding country, breaking the force of the icy winds from the south in winter and the land breezes from its summit moderating the heat during the summer months. The climate of Sydney is very much like that of Naples, with a mean annual temperature of from 58 to 62 degrees F. Frosts in winter are common; the highest temperature in summer does not exceed 104 degrees F. At Melbourne, 500 miles south of Sydney, very thin pellicles of ice are sometimes seen during midwinter on small, quiet pools of water; the summers are decidedly cooler than in Sydney. At Sydney the average annual rainfall is over 49 inches, and during the the summer, from December to the beginning of March, the sky is cloudless and the nights generally cool, sufficiently so to remind the people of the use of woolen blankets. For the American visitor winter is the proper time to see Australia, as he will then escape our summer heat and will enjoy the Australian winter with its flowers and invigorating cool breezes.

PREVAILING DISEASES.

With few exceptions the prevailing diseases of Australia are the same as of our middle states. It has escaped the ravages of cholera. Sydney recently has had a number of cases of bubonic plague, but the rigid sanitary precautions resorted to by the Board of Health have succeeded in stamping out the disease. Malaria is met with only in the tropical part of the country. Pneumonia of a very virulent type occurs most frequently during the winter season. Acute articular rheumatism is quite rare. Influenza, scarlatina and measles make their appearance from time to time. Typhoid fever appears to be more frequent in the country and villages than in the large cities, as the latter have an excellent water supply. At Melbourne this disease is most prevalent during the holiday season, when the people leave the city for their vacation and live in the country towns, where the danger of infection from contaminated water is much greater. Isolated cases occur in the cities and can usually be traced to infected wells, which are still in use in parts of the cities that remain outside of the reach of the regular water supply. The skill of the medical men is well shown by the very low mortality which attends this disease and which does not exceed 6 per cent.

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Prof. F. D. Bird has operated on three cases of typhoid fever in which a fatal termination from sepsis was imminent. He opened the abdomen, where he found a small quantity of serum, flushed with a hot saline solution, closed the wound and had the satisfaction of saving all of them, marked improvement being noticed as soon as the patients recovered from the immediate effects of the operation.

Tuberculosis of the lungs, joints, bones and lymphatic glands is met with in about the same frequency as with us. Leprosy prevails to some extent in Sydney and its vicinity. There are at present 17 cases in an isolation hospital on the coast at Botany Bay, several miles from the city. If a patient affected with leprosy has sufficient means to support himself in a house sufficiently isolated from other habitations he is not molested; if this is not the case he is compelled to seek the shelter of this "leprosery." Although actinomycosis is quite a frequent affection among cattle it is almost unknown in man. Blastomycosis is very rarely seen. Not a single case of hydrophobia has even been seen in Australia, although it has a large dog population, and the dingo or wild dog is numerous, as well as other animals capable of transmitting this disease. Tetanus is not more common than with us. In every large hospital from two to four cases are treated annually. In the acute form of the disease antitetanic serum has been found absolutely worthless as a curative agent. Hydatids are very common in the southern part of Australia, Adelaide and Sydney furnishing the largest percentage. The physicians attribute the disease to the drinking water. It affects most frequently the liver and lungs, but spares none of the internal organs. Operations on the brain for hydatid cysts figure in almost every hospital report. In all of the museums may be seen beautiful specimens of hydatids of the bones obtained by operation or postmortem specimens, illustrative of the extensive destruction of the entire shaft of the large long bones. It is also frequently found in the fascia and omentum. The disease is very rare in Queensland, resembling the geographic distribution of the disease in Germany, where it is very common in the northern part and rare in the southern. It has been observed in children from 3 to 4 years old. It pursues a more rapid course in the young than in the aged. Its course varies in different individuals. It may become latent when the cysts shrink and the symptoms subside. As the disease is often multiple, more especially in the liver and omentum, a number of operations may become necessary, as the surgeons have learned by experience that it is not wise to undertake too much at one time. Dr. Bird operated on a patient suffering from hydatids of the omentum nine times before he was able to eliminate all the cysts. The *x*-ray never fails in locating cysts affecting the upper surface of the liver; this diagnostic resource invariably yields a negative result when the under surface is affected. The methods employed in operating for hydatid cysts of the liver are not uniform. Dr. Bird cuts down on the cyst, makes a free incision, inserts the index finger, brings up the margins of the cut and stitches them to the external wound, extracts the lining membrane and drains. In operating for a cyst on the upper surface of the liver he resects a short piece of the eighth rib near the costal cartilage and through this wound deals with the cyst in a similar manner. He always drains. Dr. Fiaschi of Sydney, on the other hand, is in favor of suturing the wound at once, without drainage. In nine cases he was obliged only once to reopen the wound. At the Children's Hospital in Melbourne it has been observed that in 90 per cent. of the cases of hydatid cysts operated on an urticaria develops in from a few minutes to two hours after the operation, which disappears in the course of from one to two days and which is attributed to an intoxication by the contents of the cyst absorbed from the wound surfaces or the peritoneal cavity. The contents of monocysts are much more virulent than cysts which contain daughter cysts. In rare cases, after tapping or operation, speedy death from this cause takes place; tapping has consequently been abandoned.

THE PEOPLE.

Most of the original settlers of Australia came from England, Scotland and Ireland. These people have reserved their habits and customs to a large extent, but in the course of time a new generation has grown up whose methods of life have been molded by climate, occupation and environments. The English, Scotch and Irish accents have not suffered on Australian soil; if anything, they have become accentuated, more especially the English. This accent is bad enough in London, but is worse here. In rapid conversation some words are unintelligible to the American. It does not take long for the stranger to find this out, as all he has to do is to tackle one of the big policemen and ask him for directions to find a certain street or place of business, and he will have to listen very attentively to interpret his brogue. The real Australian is determined to make the best of the present and enjoy life. His desire for great wealth is a very moderate one, and he will not sacrifice his personal comfort to obtain it. He is satisfied with an income that will insure for him an easy existence and the cherished personal comforts. He agrees with Juvenalis:

"Wretched is the guardianship of a large fortune."

You will fail to find here the careworn, determined faces that throw a gloom over the restless throngs that crowd the streets of Chicago and other great American business centers. The Australians are excessively fond of outdoor sport. Men and women, young and old, are equally determined to throw away the cares of life as often as possible and enter with heart and soul into the enjoyment of all sorts of outdoor sports. Every Saturday noon business is suspended and the whole afternoon is devoted to pleasure. Yachting, races, baseball, golf and cricket are the most popular outdoor amusements. On the Saturday I was in Sydney 30,000 people attended a game of baseball, and as a yacht race was going on at the same time and the many events elsewhere were well patronized, it is evident that nearly every family contributed its share to the vast outdoor crowds. Sunday is respected as a day of rest. All shops and saloons are closed. In the morning the churches are filled to overflowing and during the hours of worship all tram cars come to a standstill. In the afternoon the houses are deserted and the people congregate in the many public parks, botanical and zoological gardens. The Public Domain, across the street from the Botanical Garden, is the place for the stranger on Sunday afternoon if he is desirous to obtain a good idea of Australian life. On the Sunday I visited this park, which includes about forty acres, I found a moving sea of human beings, in the center of which a military band played martial music. A short distance from the periphery of this immense gathering were smaller groups in all directions. The first one I approached was an old-fashioned Methodist exhortation meeting with a leader on one side of the small open space. After each stirring song someone would step forward and in a few words relate his religious experience and encourage others to do the same. Almost within hearing distance of these revivalists was a much larger crowd listening to a fiery political speech, the subject of which was the pending election. In the middle of the next group, and it was not a small one, a tall, lean, long-bearded man was discoursing on personal magnetism, illustrating his smooth talk with crudely drawn pictures. He explained to the gaping men, young and old, the mysteries of love and how to prevent shipwrecks in the matter of the selection of a partner for life. He had fathomed the human heart to its very depth and evidently had his share of this world's experience. For the time being he gave his advice free and liberally, but undoubtedly at the end of his harangue he supplied his audience with his address so that they would have no difficulty in finding him to obtain further details. Several fake physicians were expounding the virtues of their specific remedies which would cure all kinds of chronic diseases which still baffle the skill of the medical profession. These men had their stuff with them and were lining their pockets with silver. The next orator was talking to a large crowd of laboring men on the evils of monopolies and our billionaires received their full share of condemnation. The Salvation Army and temperance people were also well represented in this complex of gratuitous humane endeavors. In the evening the great thoroughfares presented a similar

spectacle. Australia has more than its share of orators who firmly believe in the power of eloquence.

> "Nothing appears to me nobler than to keep assemblies of men entranced by the charms of eloquence, wielding their minds at will, impelling them at one time, and at another dissuading them from their previous intentions."—Cicero.

The orderly behavior of the people and the close attention they paid to the speakers is deserving of well-merited praise. What Australia needs to develop its slumbering resources and to increase its prosperity is a larger population. The present population of this great country is less than 5,000,000, and statistics show that for the last ten years it has rather decreased than increased. Japanese and Chinese immigrants are, by a recent act, absolutely excluded. For some time these yellow people paid $500 for the privilege of entering the country. Abject poverty and begging are almost unknown. All classes of people take a keen interest in educational and charitable institutions. The typical Australian is neither a European nor an American; he exhibits qualities that indicate the geographical location of his country half-way between the European and American continents, from each of which he has assimilated habits and customs which characterize his thought and action. He has acquired the business tact of the American and retains the love for recreation and amusement of the Europeans.

THE NATIVES.

The aborigines of Australia appear to be quite a distinct race and have nothing in common with the South Sea Islanders. They bear a closer resemblance to the Africans in the black or dusky brown color, thick lips, short flat noses, narrow, high and sloping forehead; copious growth of jet black straight hair. Mentally they are far beneath the Polynesians. They live a nomadic life without a permanent habitation and rely on fish and game for sustenance. They were a fierce, warlike people who with spear, arrow, clubs and boomerang, fought the whites persistently until they became convinced of the utter uselessness of their efforts to resist the superior force of the invaders. Even now the natives of Queensland in the dense forests and jungles occasionally show a hostile attitude toward the pioneers in the steadily advancing line of civilization. The natives, who numbered hundreds of thousands when the white man took possession of the country, as the result of a war of extermination, and acute and chronic infectious diseases introduced by the whites, have been reduced to a very small number. The census taken in 1902 shows that the present native population consists of 52,157 blacks and 7,128 half castes. The Tasmanians fared even worse than this. In 1803 the island had at least 5,000 inhabitants. The whites began a war of extermination which lasted thirty years. The crude implements of native warfare proved powerless against the firearms of the invaders, and when resistance ceased there were few left to relate the story of the heroic struggle made in the defense of their beloved island, and the whites could ease their conscience by asserting:

> "It is the right of war for conquerors to treat those whom they have conquered according to their pleasure."—Caesar.

The race became extinct with the death of the last Tasmanian in 1876. Such is the cruel fate of the primitive races. Tuberculosis and syphilis are doing their insidious deadly work among the survivors of war and the ravages of acute infectious diseases, and their complete extermination is only a question of time.

THE MIKA OR KULPI OPERATION.

This custom was first noticed by Eyre (1845) in the country around the great Australian Bight, and is well described by Professor Stuart of the University of Sydney in a paper read before the Royal Society of New South Wales, June 3, 1896. The operation practically consists in, generally at the age of puberty, cutting the floor of the urethra so that it is slit completely open from below, the cleft sometimes extending only half-way back, sometimes the whole way back to the scrotum. Sometimes a mere perforation is made. The intent of the operation is to prevent impregnation and came into use as a safeguard to prevent a too rapid increase of the population, serving thus a useful purpose in diminishing the struggle for existence. The operation consists in creating a partial or complete hypospadias. "The incision is made with a sharp-edged piece of quartz, shell, flint, or, in more recent times, glass. These fixed with resin, twine, etc., into handles constitute the 'mika-knives.' The bleeding is stanched with sand, and the edges of the wound are burnt, Lemholz says, with hot stones —perhaps, as Etheridge suggests, to cauterize them—and keep from adhering again and healing by being kept apart with bits of stick, wood, bark or bone inserted between them, or by being filled with clay, or by being rubbed with a broad-edged stone." The operation constitutes a kind of a ceremony and is performed sometimes eight days after birth, but more frequently between the ages of 14 and 18. The men thus operated on are given privileges that are not within reach of the non-kulpi men. In regard to the effect of this mutilation on the chances of impregnation opinions differ. Eyre, who first described this condition, says: "This extraordinary and inexplicable custom must have a great tendency to prevent the rapid increase of population, and its adoption may perhaps be a wise ordination of Providence for that purpose, in a country of so desert and arid a character as that which these people occupy." Professor Stuart summarizes his very instructive paper in the following conclusions: 1. Nothing whatever can be definitely stated as to the origin of the custom. 2. The operation does not necessarily render the man sterile. It merely diminishes his fertility; what the degree of diminution may be will depend entirely on circumstances.

THE SURVIVING ABORIGINES.

A large number of natives still live in unexplored parts of northern Australia in their original state. The civilized portion has become a government charge like our Indians. They are extremely lazy and depend almost entirely on the government support. I visited two of these settlements, one at La Perouse on Botany Bay, seven miles from Sydney, and the other at Coranderrk, near Healeville, forty miles from Melbourne. At each of these places there are about sixty persons, most of them half-castes. The first colony lives on a forty-acre tract of land; the latter has 5,000 acres set aside by the government for their exclusive use. At La Perouse they live in small huts made of corrugated iron; at Healeville there are small frame or brick houses. Some of the oldest members of these settlements retain their original type and were children when Sydney and Melbourne were villages. All of them speak English and the children have lost the language of their parents.

SYDNEY.

Sydney is a prosperous, growing city with 450,000 inhabitants. The houses are built of stone, brick and cement or brick alone. Most of the main thoroughfares are paved with hardwood blocks, the spaces between them filled in with cement. The electric lighting and electric tram system, water supply and sewerage, the many public parks, library, museum, botanical and zoological gardens are the best proofs of the widespread public spirit of its citizens. The university, public and private schools, hospitals and other charitable institutions and the many churches speak well for the intellectuality of its people. The location of the city on the hills inclosing the magnificent harbor compares well with Naples. The country around Sydney surpassed all my expectations. Dr. Hinder gave me an automobile ride of sixty miles and we passed through a country dotted with orange groves and fruit orchards, and a part of the faultless macadamized road led over mountains 900 feet high, through virgin forests skirting dark, deep ravines, with inspiring glimpses of country scenes in the far distance. The orange trees are small and not over six feet in height, with dark green shining leaves in such strong and beautiful contrast with the heavy burden of golden fruit. The forest, or as it is here called, the bush, was resplendent with flowers of all hues and blooming shrubs.

HOSPITALS.

Sydney has made ample provision for its sick poor. The public hospitals are supported by donations and annual subscriptions; the latter are doubled by the government, besides the government pays for each charity case $5 per week. None of these hospitals has private rooms, but the patients who have means pay what they can toward their support, the maximum charge being $5 per week. Medical and surgical service is rendered gratuitously by the members of the staff. The lack of private rooms in all of these institutions makes it necessary to establish private hospitals, a number of which are conducted by nurses; others are owned and managed by the surgeons themselves.

SYDNEY HOSPITAL.

The Sydney Hospital was founded in 1814 and the original building remains as a wing of the new building. It is a massive three-story stone building adjoining the Houses of Parliament. It is the largest of the hospitals, the number of beds aggregating 460. Two large marble tablets in the main hall are inscribed with the names of its donors in gilt letters. The smallest amount that entitles a person to this distinction is $250; the largest contribution among the more than 100 names I noticed was $11,500. The ceilings are high and the wards well lighted and ventilated. Scrupulous cleanliness prevails throughout. There are two operating rooms, one for aseptic, the other for septic cases, and both are well equipped for modern work. Ether is the favorite anesthetic and biniodid

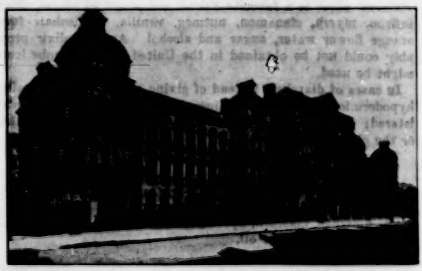

Fig. 1.—View of Sydney Hospital from the northwest.

Fig. 2.—The operating theater, Sydney Hospital.

of mercury 1 to 500 is used for hand disinfection, and catgut has the preference over kangaroo tendon as a suturing and ligature material. In the surgical wards I found many cases of fracture and excision of joints. Plaster of paris is used extensively as a fixation material, both in the treatment of fractures and after resection of joints. Hip-joint resections are usually made through the anterior Luecke incision. Asepsis is carried out in a thorough manner, as was evident from the many primary wound healings I saw. The medical staff is assisted by ten internes, graduates of the Sydney University. The appointment of internes is made on the merit of their standing in their college work. Those who have the best record go to the Prince Alfred Hospital; the Sydney Hospital has the next choice, then come the remaining hospitals. The internes receive a small salary, serve for one year and receive the benefit of all departments by transfer every three months. The Sydney Hospital has an excellent training school for female nurses which occupies a separate wing, the Nightingale wing. The course of training extends over four years. The nurses are in charge of a matron and five Protestant sisters. They receive a small compensation during their pupilage. A well-equipped laboratory and a complete Roentgen outfit add much to the scientific work of the institution. The attending surgeons are called "honorary surgeons." The present surgical staff consists of W. Chisholm, M.D. London, M.R.C.S. England; R. Steer Bowker, L.R.C.P. Edin., M.R.C.S. England; Thomas Fiaschi, M.D. and M.Ch. Univ. of Pisa; H. L. Maitland, M.B., Ch.M. Sydney. The medical staff has an equal number of members. The specialists are well represented in this institution. A very interesting feature in this hospital is the meeting of all attending men for consultation every Tuesday evening. At these meetings cases are presented and difficult diagnoses settled, and advice freely given as to the best treatment to be pursued. This phase of the medical service has much to recommend for imitation in our great hospitals. Dr. Fiaschi, who conducted me through the hospital, showed me many cases of gastric and intestinal surgery, all doing well, and a number of cases of hydatids recently operated on. Operations for stone in kidney and bladder and removal of hypertrophied prostate are of very frequent occurrence. Dr. Fiaschi is in favor of the suprapubic route in both of these operations, while some other surgeons prefer the perineal in performing prostatectomy. I was somewhat surprised to learn that the ligature remains popular in operations for hemorrhoids. The annual report shows that 19 cases of hydatids were operated on with no death. Of these cases 13 involved the liver and the remaining other parts. Of 8 cases of prostatectomy 5 were cured, 1 relieved and 2 died. No mortality in 20 ovariotomies and only one death in 12 cases of operation for myofibroma.

ROYAL PRINCE ALFRED HOSPITAL.

This is a modern hospital in every sense and has accommodations for 250 patients. It is a solid red brick building three stories high, built on the pavilion plan. It is in this hospital that the students of the Sydney University receive their clinical teaching and training. It was founded in 1871 in memory of the Duke of Edinburgh, who visited Australia in that year and was wounded by a crank who shot him. It was framed as a general hospital and medical school for the instruction of students attending the Sydney University, and for training of nurses for the sick. It is managed by a board of fifteen directors. The chancellor of the university and the dean of the faculty of medicine are directors *ex-officio;* three directors are appointed by the government and the remaining ten are selected by the government and subscribers. The medical officers are all appointed by a conjoint board, consisting of the senate of the university and the directors of the hospital. The selection is made from the teachers of the medical school and the appointment is made for six years. The medical staff is composed of three physicians, three surgeons, two gynecologists, one ophthalmologist, one dermatologist, one rhinologist and aurist. A resident medical superintendent and six internes reside in the hospital. The clinical amphitheaters are small, furnished with wooden benches and desks, the latter a great convenience for the students in recording their observations. The training school for this hospital has seventy pupil nurses who remain for four years, but receive a small salary after their period of approbation.

I found in this hospital, under the guidance of Dr. Alexander MacCormick, professor of surgery in the Sydney University, many rare and interesting cases of gastrointestinal surgery.

Professor MacCormick has a very large service in this institution. The remaining members of the surgical staff are Messrs. Charles P. B. Clubbe and H. V. C. Hinder, both of them eminent and successful surgeons. The gynecologic practice is in the hands of Messrs. Foreman and Thring, whose reputation extends far beyond the limits of Australia. The last annual report of this hospital shows some very remarkable statistics. Of 20 cases of hydatid of the liver operated on all recovered. In 30 cases of cholecystotomy operated on 26 recovered and 4 died. No death in 64 radical operations for hernia. In 16 cases of suprapubic and perineal cystotomy 2 died and 14 recovered. Sixty-five cases of simple appendectomy without a death; 27 cases of appendicitis with abscess formation with 1 death; 14 cases of appendicitis with rupture and peritonitis, 7 deaths and 7 recoveries. Three cases of pylorectomy without a death; 33 abdominal hysterectomies with 3 deaths; 60 cases of salpingo-oöphorectomy for tubal disease with 2 deaths; 11 tubal gestations with no mortality. The operative records of this hospital make an excellent showing and would compare well with those of any hospital in America and Europe. The outdoor department is in a separate building and furnishes an enormous amount of material for the teaching of minor and casualty surgery.

MEDICAL PROFESSION.

The medical profession of Sydney is fully imbued with the spirit of modern medicine and surgery. Isolated as Australia is from the other continents, its medical profession keeps pace with the newest and best in medicine and surgery. The country has no lack of the very best medical talent. The three medical schools furnish an abundant supply of young, enthusiastic and well-educated doctors to fill the gaps made by death, retirement and removal, and for this reason the country has no need of medical men from without. The doctor's social standing in Australia is much superior to our own. His financial possibilities compare well with that of any other country. A fair average fee for a capital operation is $250; maximum, $500; consultation from $10 to $25, and visits average $2.50; obstetric fee from $10 to $25. There are several men in Sydney whose annual income amounts to $30,000. The country practitioners, of course, do not fare so well, but their expenses are so much less that at the end of the year their bank account makes a fair showing. The relations between the members of the medical profession are cordial and the commercial element is not nearly as rampant as with us. The requirements for entrance into the practice of medicine are not at all stringent. A licensing board examines the credentials of the applicant and, if the candidate is in possession of a diploma from a recognized medical school, he is admitted without passing an examination. The local branch of the British Medical Association meets monthly and the sessions are usually well attended. The Australasian Medical Congress meets every three years and includes New Zealand.

Therapeutics.

[Our readers are invited to send favorite prescriptions or outlines of treatment, such as have been tried and found useful, for publication in these columns. The writer's name must be attached, but it will be published or omitted as he may prefer. It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Tuberculous Peritonitis.

Jour. des Practiciens gives the following suggestions:

ACUTE.

The treatment of this condition may be outlined in general the same as for any acute peritonitis: ice on the abdomen, opium, and milk diet.

CHRONIC.

Surgical interference is rarely demanded; never, perhaps, unless there is intestinal occlusion or a suppurative process.

MEDICINAL TREATMENT.

External.—Paint the abdomen with tincture of iodin; when this is dry apply collodion. The following has also been recommended:

℞. Guaiacol ..... m. xv 1
Olei olivæ ..... m. cl 10
M. Sig.: Paint the abdomen and cover warmly with cotton.

Brisk friction with soap has been tried. The actual cautery and fly blisters have relieved pain; the urine should be examined before blistering. The following soothing ointment is recommended:

℞. Extracti belladonnæ
Extracti hyoscyami
Extracti conii, ää ..... gr. xv 1
Chloroformi ..... m. xlv 3
Adipis benzoated ..... ʒi 30
M. Ft. ointment. Sig.: Use morning and evening.

Internal.—Care should be taken not to disturb the digestion. Cod-liver oil is not well borne. The following is prescribed by the French:

℞. Infus. walnut leaves ..... ʒi 1/3 10
Garus' elix. ..... ʒi 2/3 50
Sodii arsenatis ..... gr. 3/20 01
Syrupi cinchonæ ..... ʒv 160
M. Sig.: Two tablespoonfuls daily.

Garus' elixir is a favorite French compound of cloves, aloes, saffron, myrrh, cinnamon, nutmeg, vanilla, maidenhair fern, orange flower water, sugar and alcohol. As this elixir probably could not be obtained in the United States a substitute might be used.

In cases of diarrhea, instead of giving the arsenic internally, hypodermic injections of sodium cacodylate should be administered; these might be alternated with injections of lecithin or the glycerophosphates.

Thomas of Geneva advises:

℞. Olei morrhuæ ..... ʒiii 1/3 100
Creosoti (beechwood) ..... gr. viiss 50
M. Sig.: Use for a daily enema.

For diarrhea, bismuth, opium, and tannic acid are indicated; for constipation, castor oil.

GENERAL HYGIENE.

As in pulmonary tuberculosis, hygiene is important, plus good and nourishing foods, e. g., eggs, broiled meat, fresh butter, milk, milk stews. Fresh air, plenty of rest, and the seashore is advisable when the fever has subsided.

Facial Paralysis.

Pritchard, in the *Internat. Clinics*, vol. i, gives the following outline of treatment for this condition:

1. Massage the face daily with inunctions of lanolin.

2. ℞. Strychnin sulphatis ..... gr. 1/25 0025
Quinin sulphatis ..... gr. i 06
Ferri carbonatis ..... gr. iii 2
M. Ft. capsule No. i. Sig.: One such capsule three times a day.

3. The application of electricity in the form of galvanism is made three times a week. An Erb electrode, 2x4 inches, is applied back of the neck, and to the paralyzed side of the face an adjustable (pliable, flexible) Erb electrode, 2x4 inches, is applied. Five to seven milliamperes of electricity are introduced by means of the rheostat and the seance lasts from 10 to 25 minutes. Faradism, with a current of high tension, on alternate days would prove advantageous, especially in preventing atrophy. The empirical use of potassium iodid is sometimes of benefit, when given in doses of from 5 to 10 grains well diluted.

Influenzal Sciatic Neuritis.

1. Functional rest so far as possible. It may be necessary to put patient to bed; it may be necessary to apply the long hip splint so adjusted that local applications of heat or cold

may be made along the course of the nerve. The actual cautery may be advisable at times.

2. If drugs are necessary for the pain it is not worth while to waste time with the coal tar products or anti-rheumatic remedies, but resort to morphin in sufficient doses.

3. Electricity applied as follows is useful: Galvanism daily, from 5 to 10 milliamperes through the largest sized Erb electrodes, one under the right foot and the other under the buttocks, the patient sitting on the well-protected electrodes.

4. Massage given daily, gently at first; all so-called Swedish movements being avoided.

5. For general internal medication the author recommends the following:

B.	Strychnin sulphatis .....gr. 1/40	0016
	Acidi arsenosi .....gr. 1/50	0013
	Quinin sulphatis .....gr. i	06

M. Ft. capsule No. i. Sig.: One such capsule three times daily.

The author urges the utmost conservatism in surgical intervention, and recommends the thorough study of the case for a possible causative factor; e. g., diabetes, gout, malaria, pelvic tumors, hyperplastic conditions of the bones, aneurisms, varicose veins. Flat foot may induce symptoms closely resembling sciatica.

Intercostal Neuritis.

The author recommends the following two formulas, the second one having given the best results:

B.	Quinin salicylatis .....gr. iii	20
	Codein .....gr. ¼	016
	Quinin sulphatis .....gr. i	06

M. Ft. capsule No. i. Sig.: One such capsule every four hours.

B.	Strychnin sulphatis .....gr. 1/25	0025
	Caffein .....gr. i	06
	Quinin sulphatis .....gr. ii	12

M. Ft. capsule No. i. Sig.: One capsule every three hours.

Brachial Neuritis.

The undershirt is lined with lamb's wool fleece covering the shoulder and arm down to the wrist. Daily inunctions of lanolin by very gentle massage are given. Galvanism is given daily as follows: one electrode, 2x4 inches, heavily protected back of the neck, the extended hand resting comfortably on the other electrode, which is of the same size. The current is introduced cautiously for the first two or three treatments and the quantity must not exceed 3 milliamperes. Gradually the current is increased to 3 or 4 and even to 8 milliamperes. The following is recommended for internal use:

B.	Codein .....gr. ¼	015
	Quinin sulphatis .....gr. i	06
	Sodii salicylatis .....gr. iii	2

M. Ft. capsule No. i. Sig.: One capsule every four hours.

Diet in Diabetes.

Hutchinson, in the *London Practitioner*, gives the following suggestions for the dietetic treatment of diabetes:

In severe cases a change of diet must be made very cautiously. If the addition of a few drops of a solution of the perchlorid of iron causes the urine to assume a dark port wine color, such a patient is in danger of coma, which may apparently be precipitated by any sudden change in dietetic habits. The carbohydrates should be reduced very slowly, and bicarbonate of soda given in doses of from one-half to one ounce daily. If the patient shows signs of failure and coma by the gradual withdrawal of the carbohydrates and the substitution of the proteids and fats, it is best to abandon all attempts at a rigid diet and allow a definite quantity of carbohydrates in the form of bread and milk. In any event in this class of cases it is not advisable to give more than the equivalent of 500 grams of nitrogenous food daily.

If the perchlorid of iron test is negative a more strict diet may be adhered to without much anxiety. The sudden or the gradual method may be used; the latter is to be preferred. Eliminate from the diet sugar, and all the grosser forms of the carbohydrates, then the farinaceous foods, then bread, and finally even milk, each of the articles being replaced as it is withdrawn, by a carbohydrate-free substitute. The author gives the following as the final strict diet:

Breakfast: Bacon or buttered eggs, or both, or some cold ham; casoid-meal bread with plenty of butter; coffee made with sugar-free milk and sweetened with saccharin.

About 11 a. m.: A glass of sugar-free milk and a diabetic biscuit or rusk.

Luncheon: Any animal food, e. g., a little cold meat or game, or some fish; cheese; salad with plenty of oil; some starch-free bread; as a beverage, any natural wine or a little spirit and aërated water.

Afternoon: Tea with plenty of thick cream and a diabetic rusk or two, or biscuit, with plenty of butter.

Dinner: Any clear soup with the addition of some grated cheese; fish; any meat; green vegetables with melted butter; baked custard made of sugar-free milk and eggs; beverage as at luncheon.

At bedtime: A glass of sugar-free milk and a diabetic rusk or biscuit. If after a few weeks the patient has been doing well a small quantity of weighed bread may be allowed and the condition of the urine carefully watched.

FATTY FOODS.

"It may be truthfully said that the usefulness of any article of diet to a diabetic is in direct ratio to the amount of fat which it contains. Fat is the only nutritive constituent of food, which can not do a diabetic any harm; it never increases the output of sugar." "The best forms of fatty food are bacon and butter (each of which contains about 80 per cent.), cream (60 per cent.), and salad oil or olive oil (which are pure fat). Every diabetic should learn to consume at least a quarter of a pound of butter a day; his bread should be soaked in it, and it should be used as a sauce for green vegetables and fish. Cream may be taken in tea or coffee. If there is difficulty in digesting enough fat, the administration of a little alcohol at meals will often improve matters."

Medicolegal.

Improper Questions for Judge to Ask Expert Witness.—The Supreme Court of Georgia holds, in City of Columbus vs. Anglin, that it is error for a trial judge, after an expert witness has testified, to ask him questions so framed as to intimate an opinion that the testimony of the witness is improbable or erroneous.

Insanity or Unconsciousness as Defense.—The Supreme Court of California says, in the case of People vs. Nihell, a prosecution for assault with a deadly weapon, that the instruction given the jury that the burden of proof is on the defendant where the defense of insanity is relied on was, as a proposition of law, correct. It was contended, however, that the defense in this case was not insanity, but that the defendant was unconscious of the act. But this could not render the instruction prejudicially erroneous. The theory of the defense on the trial seemed to be that the defendant was unconscious from the dual effects of liquor and epilepsy. The jury could not fail to see that the instructions regarding insanity related to that peculiar mental condition that the defendant claimed to have been in, by whatever name it might be called. And, thus understood, it was correct to say that the burden was on him to establish the peculiar mental condition which he relied on as a defense. Men are presumed to be conscious when they act as if they were conscious, and if they would have the jury know that things are not what they seem they must impart that knowledge by affirmative proof. The rule as to the burden of proof was correctly stated, whether it be applied to insanity or to unconsciousness as a defense; and the refusal of instructions recognizing the opposite rule was proper.

Power to Quarantine—Construction of Health Laws.—The Supreme Court of Minnesota says, in Town of Iosco vs. Board of Commissioners of Waseca County, that the town, during the months of February and March, was afflicted with one case of diphtheria and a smallpox epidemic. It was claimed that un-

der the statutes the board of supervisors of the town, together with the physician to be employed by them, when, in their judgment, necessary, constituted the board of health, and that the duty of ordering and enforcing a quarantine rested with that body as a legal entity; hence that the action of the chairman of the board of supervisors of the town, who immediately, on notice from the secretary of the state board of health, proceeded to employ a physician, and then take steps to enforce a quarantine, was without authority, and furnished no sufficient basis for subsequent reimbursement against the county. But the court holds that where the chairman of the town board of supervisors, on information of the secretary of the state board of health, received information that an epidemic of smallpox was prevalent in his town, and incurred expenses to quarantine the persons afflicted therewith, but without receiving specific authority therefor from the town board of health, and the expenses were audited and paid by such board, the want of authority to order the quarantine was sufficiently ratified to authorize reimbursement from the county under the statutes in force at the time. It says that the provisions of law for the protection of the public against the spread of a pestilence are remedial, and to be largely and beneficially construed, to advance and subserve, but not embarrass, the purpose of their enactment. Effective regulations can not be promptly and successfully enforced without the employment of efficient means to accomplish that result, which requires the speedy use of the necessary remedial agencies. To delay the institution of a quarantine until the board of supervisors can be called together might defeat the very purpose of the statute, and deprive the community of the benefits intended by the health laws of the state. Hence, under an emergency such as was found to have existed in this case, where the chairman of the town board acts immediately in good faith, incurring expenses of a beneficial nature to the public, the court regards it as its duty to hold that a practical construction of the statute must be given to accomplish the purposes intended thereby. To sensibly give effect to the health laws to secure a protection of the public, a liberal and sensible view must be taken of the law to secure its object, and no technical objection that would prevent its enforcement according to the spirit and purpose of the statutory regulations should be sanctioned.

Validity of Practice Act.—The Supreme Court of California says, in *ex parte* Whitley, with reference to the constitutionality of a statute exempting from its requirements those practicing at the time of its passage, that in some instances the question arose under acts regulating the practice of medicine, and in others, as here, regulating the practice of dentistry; but the same reasoning would apply and the same constitutional principles govern as to the validity of provisions of a dental as of a medical act, because the profession of dentistry is but a special branch of the medical profession, and the power of the state to regulate as to both in the interests of the public is equally clear. Such legislation has been uniformly upheld. It is neither special nor class, and no privileges or immunities are conferred thereby on one class to the detriment of another. Nor does the court find any merit in the contention that the statute arbitrarily creates three classes of persons who may practice dentistry in the state after examination: 1, Graduates of reputable dental colleges; 2, graduates of high schools or similar institutions of learning requiring a three years' course of study, who have served an apprenticeship of four years with licensed practitioners within the state; 3, dentists from other states who have been licensed practitioners for five years. The court says that it is entirely within the power of the legislature to fix any reasonable standard for determining the competency of an applicant for admission to the practice of dentistry. It might, as under the act regulating the practice of medicine and surgery in California, where only those who are graduates from a medical college can be admitted to practice, have also made a similar single standard, limiting admission to practice dentistry to those alone who had graduated from some dental college. As this might have been the sole condition on which an applicant could be examined, it can not be said that legislation which enlarges the right and extends it to others can be said to be discriminatory. The law, no doubt is discriminatory, but not in any constitutional sense. It does not discriminate between classes. The discrimination goes to the degree of learning and skill which all applicants for examination must possess. It is a discrimination which, in the interest of the public welfare, it is the duty of the legislature to make, and concerning the necessity for which, and its nature and extent—whether an examination and right to practice shall depend on the possession by the applicant of a diploma of a dental college only, or be extended to others and how far—depends primarily on the judgment of the legislature which, when reasonably exercised, the courts can not control. And the court says that the power to determine whether a college was reputable had to be lodged somewhere, and it was properly committed to the only body which could fairly and intelligently determine, not only the qualifications of the applicant, but on the reputation of the college whose diploma he claimed to possess—the state board of dental examiners.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

October 1.

1. *The Advantages of Combining Various Modern Methods in the Radical Cure of Hernia, and the Use of Local Anesthesia. M. B. Tinker.
2. *Atypical Cases and Dust Infection. Robert Hessler.
3. Total Coloboma of the Optic Disc Without Affection of the Choroid; Total Irideremia; Ectropion Uveæ; Retained Pupillary Membrane. B. Chance.
4. *Ethyl Chlorid as a General Anesthetic. A. B. Craig.
5. Treatment of Chronic Suppurative Otitis Media. J. G. Huizinga.
6. *Present Status of the Etiology of Malignant Growths. Raymond Wallace.

1. **The Radical Cure of Hernia.**—The adoption of the important suggestions of a number of different surgeons with references to the radical cure of hernia is advocated by Tinker, who believes that such a combination operation is superior to any of the numerous methods which have been devised. The Ferguson method of closure, with the imbrication or overlapping method of Andrews, with excision of the veins of the cord, as suggested by Bloodgood; transplantation of the rectus muscle, by Woelfler, and transplantation of the neck of the sac behind the internal oblique, probably would give the results necessary to a radical cure. This composite method has all the advantages of any of these single methods, and a great many advantages not possessed by most of them. Of course, the value of faultless surgical technic can not be overestimated. Tinker also advocates local anesthesia, principally because of the lessened danger to life. He uses a 1 to 500 cocain solution to which a 1 to 120,000 solution of adrenalin chlorid is added. This prevents oozing by delaying the rapidity of absorption, practically eliminates all danger of poisoning, at the same time adding greatly to the efficiency of the anesthesia. The solution does not need to be freshly made, and it can be boiled without deterioration.

2. **Dust Infection and Dust Disease.**—Under the name dust disease, or dust fever, Hessler describes an acute infectious, endemic disease, due to the inhalation of dust contaminated by sputum. The specific diseases which can be transmitted through the agency of dust or which may follow the inhalation of dust, such as pneumonia, tuberculosis, typhoid fever, etc., are not included in the definition, but only those heretofore vague and illy defined symptom-complexes that are variously referred to or misdiagnosed as "colds," "biliousness," sick headache or migraine, hypochondria, etc., or as atypical cases of influenza, rheumatism, neurasthenia, gastritis, malaria, etc., or as cases of a rheumatic or gouty diathesis, or of lithemia, not to mention autointoxication, eyestrain, etc. Dust disease is characterized clinically by an irritation of mucous membranes; vague wandering pains throughout the body, mostly referable to the mus-

cles or ligaments; lassitude, headache, feverishness, and anorexia, up to vomiting, marked nervous disturbance and severe localized pain. It is often followed by other specific diseases. The disease is most prevalent in crowded cities, although country people may become affected or attacked on going to the city. It is absent among arctic explorers and weather observers in high mountains. Dust disease belongs to that class of affections in which there are no marked or recognizable pathologic lesions. Mucin may play an important part. The causative factor is infective dust. It is most common in the fall and spring, when high winds prevail and when the streets are not sprinkled. The practical application of the recognition of dust disease or of a knowledge of the evil influence of the dust lies along the line of prevention, pointing out to the afflicted the nature of their ailment and its cause. The inhalation of a sputum-contaminated atmosphere, also a history of attacks after similar exposures, and the absence of the disease while living in a good atmosphere, are important points in making a differential diagnosis. The treatment is principally prophylactic.

4. Ethyl Chlorid.—Craig says that the merits of ethyl chlorid as a general anesthetic are not fully appreciated. The drug is peculiarly adapted to conditions requiring brief anesthesia, such as the various minor surgical procedures occurring in dispensary service of general surgery and gynecology; in a fairly wide field in obstetric practice, and in much of the operative work of the nose and throat specialist. Its use is especially indicated in young subjects. Only the pure preparation of the drug should be used for general narcosis, and the best method of administration is some form of the "open" method—either the Ware mask or the ordinary gauze compress, the former requiring a smaller amount of the drug. It is not suited for prolonged operations, as it does not produce complete muscular relaxation.

6. Etiology of Malignant Growths.—Wallace summarizes his paper as follows:

It would appear that as the dividing line between various neoplasms is so difficult to determine, and the transition from a non-malignant to a malignant growth depends on such slight conditions, that contrary to all infectious conditions which might be considered analogous, exceedingly few cases have been recorded of malignancy in the newborn, and exceedingly few cases in childhood, which also militates against any theory of direct heredity; a multiplex and varying etiology must seem the most plausible. Intrinsic irritation of the cell-proliferating mechanism in the nucleus may, with the advance of cell chemistry, yield certain autogeneous factors; but as extrinsic factors, may be summarised: various physical, chemic and physiologic irritations and the irritations caused by parasitic life, any of which cause a resident disturbance in cell-proliferation, as it were, a loss of equilibrium, which leads to insane proliferation and the consequent formation of neoplastic growths. The degree of malignancy would then depend on the rate and type of proliferation, and the loss of function and consequent reversion of type in the proliferating cells, attest the theory of nuclear or chromatin alteration or rearrangement. The foregoing argument, based on both clinical observation and pathologic data, is offered, perhaps, as a slightly different phase of a much-discussed and ever-important subject.

New York Medical Journal.

October 1.

7 Mitral Regurgitation. O. L. McKillip.
8 The Present Condition of Tenontoplasty. (Continued.) Professor Vulpius.
9 *Professional Responsibility in Accident Cases Involving Litigation. John B. Roberts.
10 *Some of the Difficulties to Be Overcome in the Radical Mastoid Operation for the Cure of Chronic Purulent Otorrhea. Frank Allport.
11 *Headache in Relation to Diseases of the Nose and Naso-Pharynx. Oscar Wilkinson.
12 *Report of a Case of Sigmoid Sinus Thrombosis. Operation Without Ligation of the Internal Jugular Vein; Recovery. Gorman Bacon.
13 *Hereditary Abnormity of the Little Finger. George T. Mundorff.
14 The Fly as a Carrier of Tuberculous Infection. E. H. Hayward.

9. Professional Responsibility.—The professional responsibility of the medical attendant or examiner employed by the party sued for damages and that of the doctor of the patient, says Roberts, are identical. The duty of both is to obtain, as soon as possible, restoration of the victim's health and a just settlement of the pecuniary debt of the agent responsible for the accident. The writer emphasizes two points: 1. That an ignorant, careless or injudicious doctor may be the real cause of many cases of traumatic hysteria and neurasthenia, and, 2. that prompt settlement of damage suit is an inestimable aid in the cure of accidental injuries associated with litigation.

10.—This article has appeared elsewhere. See THE JOURNAL of September 10, title 82, page 759.

11. Headache and Diseases of the Nose.—Headache as a symptom is mentioned in connection with the following diseases of the nose and nasopharynx: Acute rhinitis, specific rhinitis, hay fever, asthma, hyperesthetic rhinitis, hypertrophic, atrophic, fetid and non-fetid rhinitis, morbid conditions of the osteocartilaginous framework, such as deflected septum, thickening of the septum, pressure on the septum, exostoses, synechia, and caries; sinusitis; benign growths of the nasopharynx, such as adenoids, polypi, syphiloma, echondroma, papilloma, osteoma, and rhinoscleroma; malignant growths of the nasopharynx, first, by pressure on the nasal membranes from their rapid growth, and, secondly, a constitutional condition due to cancer cachexia; finally, foreign bodies in the nose and rhinoliths.

12. Sigmoid Sinus Thrombosis.—Bacon's patient, following an attack of grippe four years ago, had an acute mastoiditis on the right side, which subsided promptly under treatment. The present illness began three weeks ago, when she had another attack of grippe followed by a severe throbbing pain in the left ear and side of the head. Four or five days later there was a discharge, profuse and thick at first, and tinged with blood. On cutting down on the mastoid process, the cells were found to be filled with pus. The mastoid tip was removed, and the sigmoid sinus exposed for one inch below the knee. It was covered with granulations, and in removing these the sinus wall was accidentally injured. In spite of every precaution, sepsis developed, necessitating a second operation. On incising the sinus between two points of compression, it was found that a thrombus was forming at the bulb. After this operation the temperature gradually came down and the patient made an uneventful recovery. Bacon thinks it probable that the infection of the sigmoid sinus is due to the accidental injury of its wall during the mastoid operation, although it is possible that the infection had already reached the sinus in the usual way. Although there was but a slight flow of blood from the bulbar end of the sinus during the second operation, he did not ligate the interior jugular vein, believing it unnecessary, as the clot in the vein had not broken down. The symptoms of sepsis subsided as soon as the parietal clot in the bulb was removed with a curette.

13. Hereditary Abnormality of Little Finger.—Mundorff's paper is the result of an examination of 38 persons, all descended from one individual. The deformity was a permanent flexion of the little finger, resembling the condition known as Dupuytren's contraction. In the members of this family, consisting of grandfather, children and grandchildren, the deformity occurred in 14; in one hand in 11 persons, and in both hand in 3 persons. In 10 cases the little finger of the right hand only is abnormal, and in one case the little finger of the left hand only is abnormal. Each of the five children also suffered from hallux valgus, but the deformity was not transmitted to the grandchildren, except in one case. Mundorff believes that these findings point to a strong hereditary influence.

Medical News, New York.

October 1.

15 A Case of Tumor of the Spinal Cord in the Cervical Region. George Woolsey.
16 The Need of Efficient Public Health Work in the Suburbs. George A. Soper.
17 *Cytodiagnosis in Pleural Effusions. Herbert S. Carter.
18 *An Analysis of 42 Cases of Venous Thrombosis in Typhoid Fever. W. S. Thayer.
19 *The Treatment of Simple Rectal Fistula by Excision and Suture Without Cutting the External Sphincter Muscle. Howard A. Kelly.
20 Observations on the Blood and Circulation in Uncinariasis. W. G. Harrison.
21 Presidential Address: Our Aims. S. J. Meltzer.
22 Report of a Case of Obstinate Phosphatic Diathesis Cured by Systematic Dilatations of the Posterior Urethra. George T. Mundorff.

17. Cytodiagnosis in Pleural Effusions.—With a view to establishing the value of cytodiagnosis in pleural effusions, especially those of tuberculous origin, Carter carefully examined 56

cases, 10 of which were of known tuberculous origin and 20 of probable tuberculous origin. In 6 cases the effusion followed lobar pneumonia. His results are extremely suggestive, and because of their uniformity in the various series of cases, certain facts may be accepted as positive. He found that all true pleural effusions have a specific gravity over 1010, usually much higher, with an average of about 1017.9; a high fibrin and albumin content. Pleural transudates, on the other hand, have a low specific gravity, the average being about 1008, a small fibrin and albumin content. An almost certain diagnosis of tuberculous pleurisy can be made by the morphologic examination of the fluid. It rests on its having a high specific gravity—1012 to 1024, average 1018.6; a large amount of fibrin and albumin, with an accompanying lymphocytosis. If a polymorphonuclear leucocytosis is found before the third or fourth day of a tuberculous pleurisy, subsequent examinations will be necessary to establish a positive diagnosis. Post-pneumonic serous effusions have a very high specific gravity, averaging 1016.5; large fibrin and albumin content, with a polymorphonuclear leucocytosis, 58 to 92.5 per cent., averaging 71.7 per cent. A differential diagnosis between a pleural transudate and a tuberculous pleurisy can not rest alone on a differential cell count, as they both show a lymphocytosis, but must rest on a more complete examination, including the specific gravity and the amount of fibrin and albumin. The fluid should be examined as promptly as possible after aspiration. The color, turbidity, specific gravity, reaction and relative albumin content are then obtained. When the fluid cools the presence or absence of a fibrin clot is noted. This is a gelatinous mass when seen fresh and undisturbed, but on agitation of the fluid collects into a small oblique mass of more dense fibrin, resembling that seen after whipping fresh blood. Guinea-pigs may be inoculated for bacteriologic diagnoses with from 2 to 9 c.c. of the fluid, the injection to be made subcutaneously into the anterior chest wall. To complete the examination, a conical tubeful of the fluid is rapidly centrifuged for five minutes and the sediment stained on a cover slip with Jenner's differential stain. A differential count is then made of the leucocytes; the endothelial cells, erythrocytes and general characters noted.

18. **Venous Thrombosis in Typhoid Fever.**—Thayer has gathered together statistics with regard to cases of venous thrombosis occurring in the course of typhoid fever. Out of 1,463 cases of typhoid fever, there have been 39 instances of venous thrombosis, a percentage of 2.6. Two cases were admitted during convalescence, while one case, a patient who had suffered from double iliac thrombosis coming on during typhoid fever, entered the hospital for treatment two years later. In all these cases the onset occurred almost invariably in the third week or later. Local pain and fever were usually the first symptoms. The fever sometimes preceded the localizing symptom. In 28.2 per cent. of these cases there were chills, the chill in several instances preceding the appearance of localizing symptoms. As a rule, the condition was associated with an increase in the number of leucocytes, the leucocytosis apparently depending on the extent of the lesion. In mild cases it may be absent. The thrombosis was commonest in the lower extremities, especially on the left side. The femoral vein was most often involved. Thayer says that in the event of a sudden severe pain in the lower part of the abdomen, coming on during the latter part of typhoid fever, and associated with a leucocytosis, the possibility of iliac thrombosis should always be considered. Venous thrombosis in a lower extremity is always a serious complication of typhoid fever. Although the immediate danger is not great, the after-results are often grave. In thrombosis of the popliteal or deep veins of the calf alone, the permanent changes are much less severe, though the leg always remains larger than the other. In thrombosis of the femoral vein a greater or less part of the blood from the affected extremity is often carried up by the iliac vein of the opposite side, the current crossing the abdomen through an anastomosis in the hypogastrium, resulting in a characteristic triangular area of varicose veins.

19. **Treatment of Simple Rectal Fistula.**—Kelly describes a method which he has tried in five cases, with three successes. However, to employ his method successfully, the fistula must be simple and direct. He empties the bowel thoroughly, having the patient under his care for at least two days before the operation. The rectum is dilated under anesthesia, and a pack is inserted within the ampulla. The external orifice of the fistula, which must be free from any signs of surrounding inflammation, is then circumscribed, and after being grasped with forceps, the fistulous tract is carefully dissected out up to its abutment of the mucous surface of the bowel, in the region of the internal sphincter muscle. The rectal orifice is next carefully excised through the wound so as to make a transverse opening parallel to the sphincter fibers, when the excision is completed and the fistula removed. If the wound is a shallow one, it may be closed with a few interrupted silkworm-gut or silver-wire sutures, extending from the skin surface down to the bottom, care being taken to draw the circular muscle fibers together above and below the rectal orifice, and to avoid leaving any dead spaces. The margin of the bowel is next everted and the operation concluded by closing the opening on the mucous surface with fine silk suture. It is a good plain, says Kelly, to cut away some of the mucosa below the rectal end of the fistula, so that when the mucous membrane is sutured the mucosa from the upper margin of the opening is drawn down and sutured to a point a centimeter or more below the orifice, in this way covering it in by withdrawing the line of suture from any direct relation to the deeper wound. No effort should be made to move the bowel for from five to seven days, keeping the patient on a diet consisting of nothing more than sips of albumin water. If suppuration occurs, the infection breaking through into the bowel, Kelly advises passing one blade of a pair of scissors or a bistoury through the opening, dividing it with one cut and packing it, the patient in that event being no worse off than if an ordinary incision and packing operation had been done.

Medical Record, New York.

October 1.

23 *A Critical Review of the Study of Cancer. Anna M. Galbraith.
24 Electricity in Medicine. A. D. Rockwell.
25 The Idea of Gross Cleanliness in Surgery and Its Harmful Results. Robert T. Morris.
26 Traumatic Apoplexy. Pearce Bailey.
27 The Indications for Surgical Intervention in Chronic Gastric Ulcer. Frank H. Murdoch.
28 *Peculiar Nervous Symptoms Following Operation. W. R. Blailock.
29 Some Thoughts Concerning Two Recent Cases of Ectopic Gestation. A. Brothers.
30 Esophageal Diverticulum; Operation; Death. H. A. Bernstein.

23. **Study of Cancer.**—Some of the more striking features of the review by Galbraith of the study of cancer covering the last two hundred years are: 1, That cancer is almost wholly absent in the tropics; 2, that cancer is very rare among savage races; 3, that with the advance of civilization and the increased prosperity of nations there has been a steady and marked increase of cancer; 4, that this disease is more prevalent among the well-to-do and wealthy than it is among the poor; 5, that it is more common among men; 6, that it is hereditary; 7, that it is a disease par excellence of the climacteric; and, 8, that in order for tumors to become malignant a lessened physiologic resistance of the whole tissues or of the body in general is necessary. As to treatment, the first step taken must be in the direction of prophylaxis; when a woman reaches the age of 40 she must be placed in the best possible position for the resistance of this disease. Should cancer make its appearance, an immediate operation is imperative. If the case, when first seen, is too far advanced to make operation advisable, or should there be a recurrence of the disease, the *x*-rays and violet rays, combined with serumtherapy, offers the greatest hope. Based on the absence of cancer in the tropics, and that other well-known fact that light is capable of killing the tubercle bacillus, treatment by direct sunlight should be instituted.

28. **Peculiar Nervous Symptoms Following Operation.**—Blailock removed a cystic tumor in a young woman, aged 22, who, seventy-two hours after the operation, began to have slight twitchings, not confined to any special muscles. Soon after the

patient became unconscious, the right leg and arm were extended, the left was drawn up; the jaws were locked; the pupils were normal. When she was allowed to be perfectly quiet for awhile the lower jaw was dropped, but as soon as she was touched the jaws would close violently. This condition lasted eight days, during which time the patient received large quantities of normal salt solution. The temperature never exceeded 99, and only once did the pulse rise to 130. The patient eventually made a complete recovery.

Boston Medical and Surgical Journal.

October 1.

31 Disease of the Myocardium. Henry Jackson.
32 *Abscess of the Liver Following Abdominal Infections, with a Report of Four Cases. Daniel F. Jones.
33 *The Blood Pressure in Fevers, Before, During and After the Administration of Strychnia. Richard C. Cabot.
34 Examination of Pleural Fluids with Reference to Their Etiology and Diagnostic Value. (Continued.) Percy Musgrave.

32. Liver Abscess Following Abdominal Infections.—Jones has collected 114 cases of abscess of the liver following abdominal infection from the literature. Of these, the appendix was the focus of infection in 100 cases; salpingitis or pelvic cellulitis in 11 cases, and perforating gastric ulcer in 3 cases. The most frequent situation was the right lobe, close to the posterior superior surface. It was the seat of the abscess in 50 per cent. of the cases, both lobes in 44 per cent., the left lobe in 6 per cent. The varieties of abscesses found were: 1, Multiple abscesses, usually situated near the periphery, and varying in size from that of a pinhead to that of a walnut; 2, the single abscess, usually situated close to the periphery, but may be found in any part of the organ; 3, large single abscess surrounded by a colony of small ones; 4, two or more large abscesses, widely separated; 5, several large abscesses which may connect; or, 6, one large abscess, with the remainder of the liver filled with small ones. The portal vein was found to be infected in 55 cases; in 38 it was not stated whether the vein was infected, while in only 21 was it stated that it was not infected. Of 114 cases, 16, or 14 per cent., were operated on for drainage of the abscess; 7 cases, or 44 per cent., recovered, while of those not operated on none recovered. It is interesting to note that of the 7 recoveries, in 3 one or more ribs were resected; in 2 the abscess was in the left lobe and drained through the abdomen; in 1 it was in the right lobe and drained through the abdomen; while in another, after an abdominal incision had been made and closed, the abscess ruptured through the incision. Jones adds to this list of cases culled from the literature, 4 cases seen by him, 2 of which were undoubtedly the result of appendicitis. One was possibly due to the result of appendicitis, though there was no definite proof of this, and 1 was the result of an abscess in the region of the pylorus, probably a perforated gastric ulcer. All of these cases were operated on, but only two recovered.

33. The Effect of Strychnia on the Blood Pressure in Fevers.—Cabot noted the effects of strychnin on the blood pressure in 31 cases of typhoid, 4 of pneumonia, and 15 others with a variety of diagnoses. In 32 cases the strychnia was given by mouth and in 18 subcutaneously. The total daily dose was usually 1/8 grain, sometimes 1/6 grain. Records were taken for days and occasionally for weeks before and after the drug was given. All measurements were taken with Stanton's modification of the Riva-Rocci instrument at intervals of a few minutes to several hours, succeeding the administration of the strychnin. The observations extended over about eight months, and included about five thousand measurements. The total result was negative. Cabot was unable to convince himself that strychnin exerts any influence on the blood pressure of febrile cases when given in the manner and dose mentioned above. There was no change in the blood pressure following the administration of the drug in 24 cases, a fall in 17, a rise of 5 millimeters or more in 16 cases. The average pressure in the 30 cases that received a daily dose of strychnia was no greater than in 18 cases without any drug.

St. Louis Medical Review.

September 24.

35 An Instance of Heredity in Werlhoff's Disease. John Knott.

October 1.

36 Remarks on the Surgery of the Biliary Passages. Maurice H. Richardson.

Cincinnati Lancet-Clinic.

October 1.

37 Retroversion. J. C. Tritch.
38 Pericemental Abscess. D. D. Smith.

Therapeutic Gazette, Detroit.

September 15.

39 *Feeding and the Rest Cure in Typhoid Fever. H. A. Hare.
40 Some Observations on Malaria with Special Reference to the Disease as Complicating Enteric Fever. A. S. Pendleton.
41 *Vertigo. Charles J. Aldrich.
42 Alveolar Pyorrhea; Its Cause, Sequelæ and Cure. D. D. Smith.
43 *The Use of Sodium Chlorid After an Application of Silver Nitrate. Walter B. Griest.
44 Sepsis and Asepsis in Intranasal Surgery. Joseph S. Gibb.

39. Feeding and Rest Cure in Typhoid.—Hare fails to see any reason that would justify disordering metabolism by the institution of a rigid single diet, and is fully impressed, from personal experience as well as from physiologic facts, with the utter inadequacy of the pure milk diet in the treatment of typhoid fever. It is his custom to give all patients after the first week of typhoid from one to two soft-boiled eggs a day in addition to the ordinary allowance of milk, and to vary their diet by the use of curds and whey, rice which has been boiled to a pulp, barley, wheat and oatmeal gruel, and a cup of cornstarch with vanilla or some other flavoring substance of a like character. As a result of this diet he very rarely sees marked ataxia, which is so common a symptom in convalescence and typhoid; and the patient's nutrition is so well preserved that he is but little more emaciated than many cases of acute pneumonia at the time of recovery. Secondary complications like furuncles and bedsores are unknown. He believes that the average case of convalescent typhoid fever is a fair mark for any infection, because the patient is half starved. Recognizing that typhoid fever is characterized by a deficient secretion of digestive juices, all his patients receive hydrochloric acid and pepsin with their proteid foods, and takadiastase and pancreatin when carbohydrates are used. He is utterly opposed to the use of beef tea, which he believes acts as a first-rate culture medium and frequently increases tympanites and diarrhea, and the stools become infected under its use. Hare considers that the value of the modern method of treating typhoid by cold depends in great part on the fact that when cold bathing is used the patient, who is undoubtedly suffering from a form of toxemic neurasthenia, receives a form of rest cure which maintains strength and puts him in first-rate physical condition. The free use of cold water is not the chief factor for good in these cases, but the rubbing or massage which follows these baths is of the very greatest importance, aiding the dissipation of body heat, readjusting the circulation and exerting on the patient the beneficial effects which follow the use of massage as seen in the rest-cure treatment of neurasthenia. Therefore, he advocates the employment of the Weir-Mitchell rest cure in the treatment of typhoid fever. Equally good results can be obtained if these patients are properly sponged, with friction, instead of being plunged. The sponging possesses the additional advantage that the patient does not have to be moved from his bed, that the great muscles of the back can be given more attention than the anterior portion of the body, thereby increasing the dissipation of heat very greatly and preventing the formation of bedsores. Patients with a temperature below 102.5 should be given tepid baths with friction. Since he has been feeding his patients, Hare finds that he is giving them less alcohol than formerly, probably because the patient burns up food products in the body instead of burning up alcohol. He throws out the suggestion that alcohol may act as a stimulant on the functions which are connected with immunity and the ability of the body to resist infection.

41. Vertigo.—The entire subject of vertigo is discussed by Aldrich, and several cases are reported. He emphasizes the value of the hemadynamometer in making a differential diagnosis in certain forms of vertigo.

43. Sodium Chlorid and Silver Nitrate.—The use of a solution of sodium chlorid after the application of silver nitrate to any

part of the urethra has shown itself, in the hands of Griess, to be of great value. The indications and reasons for the employment of sodium chlorid are: 1, The silver salt can be used with greater comfort to the patient, as all excess silver is precipitated; 2, the desired effect from silver nitrate is accomplished quickly, therefore an excess should not remain in the urethra, as it not only causes unnecessary pain, but actual harm; 3, the caustic effect of the silver salt is eliminated to a great extent; 4, the stronger per cent. solutions of the silver salt, which are often necessary, can be used, for overaction or caustic effect need not be feared; 5, the application can be made more general; 6, clinical evidence shows that this method of application yields excellent results and that the proper per cent. solutions to really do good can be used. The application of the solution of sodium chlorid should be in a manner the same as is employed when the silver was injected, by means of a deep urethral syringe. Enough time should elapse after the application to allow the operator to remove the syringe, wash it out, and then proceed as he did with the first injection.

Physician and Surgeon, Detroit and Ann Arbor.
September.

45 *Intracranial Tumors in the Insane, with a Report on Two Cases. Irwin H. Neff.
46 The Study of Pathology. George Dock.
47 Remarks on Biliary and Hepatic Surgery. Hal C. Wyman.

45. **Intracranial Tumors in the Insane.**—Owing to the difficulty in securing a subjective history, and also to the resistance often offered by the patient to the necessary examinations, cases of brain tumors in the insane are quite frequently overlooked or remain unrecognized during life. Neff reports two cases of brain tumor, both patients being pronounced insane at the time of admission to the asylum. In one case the psychical condition was thought to be dependent on syphilitic brain disease; in the other case, epilepsy was believed to be the cause. A short time after admission to the asylum, a diagnosis of brain tumor was made in the first case, but its exact site, which proved to be basal, was undetermined. In the second case a large subcortical sarcoma, involving one entire hemisphere and extending to the opposite side, was recorded as an anomalous case of paretic dementia; but during the latter months of the patient's illness a brain tumor was suspected. Both cases had a clear history of syphilis, but at the autopsy neither of them showed the characteristic lesion of luetic brain disease. Neff considers the first case a particularly interesting one, as it demonstrates that an intracranial pressure can be directly responsible for not only the general symptoms of brain tumor, but also for "focal symptoms," which are commonly ascribed to localized lesions. The tumor was located about the center of the middle cerebral lobe, and was quite extensive. There was no infiltration of brain tissue, but simply absorption from pressure. The tumor had a definite capsule composed of very thin fibrous tissue. The interesting factors in the second case, a sarcoma of the entire left cerebral hemisphere, extending to the right basal ganglia, the right temporosphenoidal and about one-half of the frontal lobe, were the persistence of fixed and systematized delusions of persecution; the disturbance of speech; active and severe attacks of delirium, and symptoms indicating "focal disease."

University of Pennsylvania Medical Bulletin, Philadelphia.
September.

48 *The Heart and Circulation in Pregnancy and the Puerperium. Alfred Stengel and W. B. Stanton.
49 Pictorial Groups or Charts Used in the Course in Surgical Pathology, with a Brief Outline of the Course. Charles H. Frazier and George P. Muller.
50 On the Histological Behavior of the Cardiac Muscle in Two Examples of Organization of Myocardial Infarcts. Allen J. Smith.
51 *A Clinical Study of the Diazo Reaction. W. Taylor Cummins.
52 A Note on Laboratory Teaching in the University of Pennsylvania. Alfred Stengel.

48. **Circulatory System in Pregnancy and Puerperium.**—Stengel and Stanton have made a very careful study of the heart and circulatory system during pregnancy and the puerperal state in 60 cases, in order to determine what changes, if any, take place. They conclude that there is not, during pregnancy, any hypertrophy of the left ventricle, nor any special increase in its work. That the increase of dullness toward the left is due to the upward displacement of the diaphragm and the consequent displacement of the heart in an upward and outward direction. That after labor the heart returns rapidly to its normal position. The extension of dullness toward the left in the second and third interspaces, the frequency of distinct pulsation and a systolic murmur in the same area, the authors believe to be due to distension of the conus arteriosus and the root of the pulmonary artery. They are convinced that during the later months of pregnancy there is some continuous dilatation of the right ventricle, though this is apparently of very moderate degree. In multiparæ, separation of the recti materially lessens the tendency to displacement of the diaphragm and diminishes in a corresponding degree the displacement of the heart during pregnancy. After delivery this diastasis of the recti may occasion a downward displacement of the apex of the heart, and the contrast before and after labor may be quite as pronounced as in the primipara. Later, if the separation of the muscles is not considerable and the normal tone of the abdominal walls is regained, a restitution to the normal of the heart and its apex occurs. The investigations of the blood pressure made by the authors show that there is no material increase either before or after labor. During labor there may be a notable increase in the blood pressure, which may be explained by the holding of breath, the expulsive efforts, etc.

51. **The Diazo Reaction.**—Cummins has investigated the value of the Diazo reaction as an aid in diagnosis, and sums up his paper as follows: 1. The Diazo reaction is of importance in differentiating a relapse from a complication in typhoid fever. 2. It may be of assistance in separating measles from German measles. 3. It has great prognostic significance in pulmonary tuberculosis. It does not appear until late, and is usually noted in a rapid case. When it once appears it persists until death. The average duration of life after the appearance of the reaction is about six months. An unfavorable prognosis should be given in every patient presenting this reaction. 4. The Diazo reaction at a dilution of 1 to 40 is of some value in the diagnosis of typhoid fever, but on employing a dilution of 1 to 150 other conditions are eliminated (except a small percentage of tuberculous cases), and the test, therefore, is considerably enhanced in value.

Southern Medicine and Surgery, Chattanooga.
September.

53 *Some Remarks on the Diagnosis of Typhoid Fever. Greer Baughman.
54 Treatment of Typhoid Fever. Wm. S. Gordon.
55 Modification of Fracture Splints for Thigh Fractures. G. A. Baxter.

53. **Diagnosis of Typhoid.**—For the diagnosis of typhoid in the first week, Baughman says the practitioner will have to depend on: 1. The history of malaise, anorexia, chance of infection, headache, etc. 2. Temperature curve. 3. Pulse (out of proportion to the fever and sometimes dicrotic). 4. Tympanitis; gurgling in the right iliac fossa; tenderness. 5. Rose spots at the end of the week. 6. Widal's reaction. 7. Blood examination, normal leucocytes, but increased mononuclears and decreased polynuclear count. 8. Diazo reaction. 9. Isolation of bacilli in feces. 10. Isolation of bacilli from blood, and rose spots or splenic puncture, when practicable.

Journal of the Michigan State Medical Society, Detroit.
September.

56 *The Relation of the Appendix to Pelvic Diseases. Reuben Peterson.
57 *Succinic Peroxid. Charles C. Yarbrough.
58 Cause and Treatment of Puerperal Eclampsia. A. N. Collins.
59 *Eclampsia and Vaginal Cesarean Section. J. H. Carstens.
60 Pneumonia in Children. Loren Curtiss.

56.—See abstract in THE JOURNAL of September 10, title 37, page 756.

57. **Succinic Peroxid.**—According to Yarbrough, this is an organic peroxid derived from succinic acid. It is a fluffy, finely crystalline powder, soluble, colorless, stainless, odorless, nonpoisonous, non-volatile and practically non-irritating. It does not coagulate albumin. It is also non-corrosive to animal tissues, non-explosive and non-hygroscopic. It is useful for the sterilization of the hands, local surface areas, instruments and

appliances, dressings, sponges, etc., taking the place of bichlorid, hydrogen peroxid and carbolic acid. It may also be used internally as a wash, gargle, injection, in the form of the powder, for insufflation and as a dusting powder.

59. **Eclampsia and Vaginal Cesarean Section.**—Severe continuous puerperal convulsions, says Carstens, are often fatal, or leave serious sequelæ, hence require the most heroic treatment. Prompt delivery affords the best—in fact, the only—chance for success. Vaginal cesarean section enables the accoucheur to deliver promptly.

Pennsylvania Medical Journal, Pittsburg.
September.

61 Medical Organization. John B. Donaldson.
62 *Case of Appendicitis with Fecal Fistula. W. S. Langfitt.
63 Otitis Media. J. B. Follmer.
64 Wounds and Their Treatment. Henry D. Michler.
65 The Unique Position and Value of Mercury in Therapeutics. I. Newton Kalvely.
66 Removal of the Crystalline Lens in High Myopia. Edward Stieren.
67 Pathologic Anteflexion of the Uterus. John H. Girvin.
68 Mechanical Version of the Diagnosis of Valvular Lesions of the Heart. J. C. O'Day.
69 Another View of Medical Progress. M. R. Evans.
70 *Earache. G. Hudson Makuen.
71 Typhoid Fever. R. Myers.

62. **Appendicitis.**—Langfitt reports a case of suppurative appendicitis in which, after operation, the condition of the patient became progressively worse because of obstinate constipation. Finally a fecal fistula established itself at the stump of the appendix, and much fecal material was discharged through it. The temperature on the following day was normal; the patient in fine condition, with the fistula discharging and the bowels moving freely. Ten days later temperature rose to 102, vomiting reappeared, with great pain and distension. Examination revealed the fistula to be closed. Langfitt made a second fecal fistula, and an enormous amount of fecal material was discharged through the new opening. On the following day vomiting ceased and pulse and temperature were normal, and remained so throughout convalescence. The immediately improved condition of the patient after the formation of each fistula is convincing evidence of its worth.

70. **Earache.**—Makuen discusses the causes of earache and the treatment, at the same time advising that every physician familiarize himself with the use of the head mirror and the aural speculum so as to enable him to diagnose diseases of the external auditory canal and the tympani. It is essential to detect middle ear complications in their incipiency.

Northwest Medicine, Seattle.
September.

72 Some Practical Points in General Paresis. Walter T. Williamson.
73 Report of a Case of Perforation of the Gall Bladder in Typhoid Fever. Park W. Willis.
74 *Humanity and Common Sense vs. Idealism in Venereal Prophylaxis. G. S. Peterkin.

74. **Venereal Prophylaxis.**—The object of Peterkin's paper is to demonstrate that the best and most logical method of venereal prophylaxis is the education of the individual; that the educator must realize that every man must and will make his own morality; that the educator's line of argument, to be efficient, must deal with universal and necessary principles and be based on natural conditions, not idealisms; that from a standpoint of morality, there are many men in various degrees of moral evolution; that they evolve by degrees; that different arguments appeal to different degrees of evolution; that to appeal to all classes and any individual, one must possess a good knowledge of every side of the subject to be dealt with and the principles that govern its action. He advises that scientific facts should be stated in a systematic, concise, yet acceptable manner, so that men and women, knowing them, will see the necessity of protecting themselves, and in so doing will limit the spread of venereal disease. He suggests that these facts may be arranged in pamphlet form under the following heads: 1. Facts for all men. 2. Facts for some young men. 3. Statistics showing the dangers and monetary losses caused by venereal diseases. 4. Personal prophylaxis against venereal disease for men during sexual indulgence. 5. Personal prophylaxis against venereal disease for women during intercourse.

Southern California Practitioner, Los Angeles.
September.

75 *Stab Wound of the Heart; Report of a Case. Arthur M. Smith.
76 *Ectopic Gestation; Report of a Case. Titian Coffey.
77 Chorea; a Thesis. S. F. Davis.
78 *Trephining of Skull Twelve Years After Accident. Will S. Smith.

75. **Stab Wound of the Heart.**—Smith reports the case of a man, aged 22, who received a stab wound in the left breast, between the fourth and fifth ribs, two inches to the left of the sternum, the knife blade penetrating the right ventricle. When seen thirty minutes after the infliction of the wound the radial pulse was imperceptible; the heart sounds were barely audible. A curved incision, about six inches long, was made, beginning at the upper border of the fourth rib, extending through the stab wound to one inch to the right of the left border of the sternum. Two inches of the fourth and fifth ribs were resected, together with a portion of the sternum. The pericardium was opened, and the heart brought up into the field of operation. The laceration was ragged and parallel with the heart muscle. It was closed with a continuous silk suture. The pericardial cavity was washed with normal salt solution and the sac sutured with a continuous silk suture. Silkworm gut was used to unite the skin flaps, a gauze drain being inserted. Moist bichlorid dressings were applied, and over these a pad of absorbent cotton and a binder. During the operation, which lasted about fifty minutes, the patient was receiving normal salt solution in both thighs. The patient felt well and was doing nicely up to the time of death, which occurred seven days after operation. The cause of death was pericarditis. At the autopsy it was found that the laceration in the pericardium and in the heart wall had healed perfectly and there was not the slightest oozing. The sacs contained an apparently healthy fluid, but with adhesions from the sac to the heart. The posterior surface of the heart and left ventricle was covered by plastic inflammatory exudates. The heart wound was filled with healthy granulation tissue.

76. **Ectopic Gestation.**—The case reported by Coffey was operated on at the eighth month of pregnancy because the patient had ceased to feel life. The skin of the fetus was slightly macerated; the membranes were intact on the head and fitted over the scalp at the hair line like a cap. The patient gave a history of a severe pain and hemorrhage at the end of the first month of pregnancy, at which time, no doubt, the embryo was passed into the abdominal cavity, where it continued to develop among the intestines. Considerable difficulty was experienced in removing the placenta, but eventually the patient made a splendid recovery.

78. **Trephining Twelve Years After Accident.**—Smith's patient consulted him twelve years after sustaining a compound fracture of the skull, with depression of the inner table, because of a persistent, dull, aching pain on the left side of the head, which also affected the muscles of the neck and was referred downward to the left hand. A very strange symptom was that the patient could turn his head to the right side without turning his body, but when he tried to turn his head to the left side he would have to turn his body to the same side. The depression corresponded internally to a point about the middle third of the central convolution. The under surface of the bone was chiseled away to correspond with the size of the external opening; the underlying thickened portion of the dura was removed, and the wound closed with silkworm gut, a gauze drain being inserted for the first twenty-four hours. The operation was successful in every way. Worthy of note in this case is the action of aseptic ergot, which the patient received hypodermically twice a day after the operation. The ergot not only relieved the pain, but also produced a quiet, refreshing sleep.

Louisville Monthly Journal of Medicine and Surgery.
September.

79 Remittent Fever. Cassius D. Mansfield.
80 Case of Splenic Leukemia Treated by the X-Rays. J. T. Dunn.
81 *Internal Hemorrhage from Ectopic Gestation Without Rupture of the Sac. E. E. Montgomery.

81.—This article has appeared elsewhere. See THE JOURNAL of August 20, title 64, page 571.

Journal of the Kansas Medical Society, Lawrence.

September.

82 Care of Perineum During and After Confinement. S. B. Langworthy.
83 Topographical Anatomy of the Human Head as Shown by a Series of 11 Drawings of Cross Sections. Marie A. Greene.

Journal of Cutaneous Diseases, New York.

September.

84 Affections of the Mucous Membranes in Their Relation to Skin Diseases. John A. Fordyce.
85 Ibid. M. F. Engman.

Canadian Practitioner and Review, Toronto.

September.

86 Uncertainties of Diagnosis and the Necessity of Early and Vigorous Treatment of Diphtheria. T. F. McMahon.
87 Surgical Treatment of Gastric Ulcer. Frederick W. Marlow.
88 Financial Responsibility of the Medical Examiner for Life Insurance. Bruce L. Riordan.
89 Some Observations on the Nursing of Typhoid Fever. Elizabeth C. Gordon.

Iowa Medical Journal, Des Moines.

September 15.

90 Case of Prostatectomy. Wm. H. Corrigan.
91 Delirium. Gershom H. Hill.
92 Smallpox in Worth County in 1899, 1900 and 1904. J. Herbert Darey.
93 Case of Intestinal Obstruction from a Meckel's Diverticulum. A. B. Poore.
94 My Theory About the Cause of Tumors. G. L. Stempel.
95 Observations on the Treatment of Puerperal Infection. Q. C. Fuller.
96 The Decrease in the Treatment with Radium. J. Rudis Jicinsky.
97 Shall We Amend Our Therapeutics and Our Prognosis? A. M. Linn.

Ophthalmic Record, Chicago.

September.

98 Some Remarks About Glaucoma. Joseph A. White.
99 Lipoma of the External Rectus Muscle. Casey A. Wood.
100 Hysteria in Relation to Refraction. Arthur C. H. Friedmann.
101 The Relation Between Presbyopia and the Range of Accommodation; a Simple and Convenient Formula. F. B. Eaton.

Kentucky Medical Journal, Louisville.

September.

102 In What Per Cent. Is the Regular Profession Responsible for Criminal Abortions, and What Is the Remedy? C. J. Aud.
103 Common Sense in Surgical Technic. Ap. Morgan Vance.
104 Present Epidemic of Pneumonia. R. D. Pratt.
105 Pneumonia, Its Mortality, Contagious Character and Prophylaxis. Louise Southgate.
106 Acute Ascending or Landry's Paralysis: Report of a Case in a Child of Two Years. Henry E. Tuley.
107 Why Properly Paid County Health Officers are Essential in Kentucky. J. N. McCormack.
108 Entero-colitis. C. P. Harville.

Canadian Journal of Medicine and Surgery, Toronto.

September.

109 Report of a Case of Bilateral, Congenital Dislocation of the Hip Treated by the Lorenz Bloodless Method—Brief Review of the Present Status of the Lorenz Method. H. P. H. Galloway.
110 The Diagnosis of Modified Smallpox (so-called). Charles A. Hodgetts.
111 A Case of Gastroschisis or Fissura Abdominalis. Joseph H. Peters.

American Medical Compend, Toledo, Ohio.

September.

112 Diagnosis of Pathologic Conditions at the Hip Joint. Thomas H. Manley.
113 Things of Specialism and of This Society That Make for Optimism. William M. Beach.
114 How to Curette. C. M. Harpster.
115 Early Diagnosis and Treatment of Diphtheria. W. D. Stewart.
116 Intestinal Parasites in Children. C. E. Monroe.

Journal of the Mississippi State Medical Association, Vicksburg.

September.

117 The Medical Treatment of Dysmenorrhea. J. M. Alford.
118 Pelvic Abscess. W. H. Scudder.
119 Treatment of the Opium Habit by Hyoscin Hydrobromate. J. M. Catchings.
120 The Country Surgeon and His Nurse. J. T. B. Berry.
121 Remarks on Empyema. L. Sexton.
122 Better Hospital Facilities for Our Public Institutions, Jails, etc. J. H. Rhodes.
123 "Pain in the Bottom of the Belly." E. J. Johnson.
124 Dislocation of Spine—Report of Case. J. D. Donald.

Medical Standard, Chicago.

September.

125 Clinical Report of a Case of Cholecystitis Calculosa with Cholecystectomy. Byron Robinson.
126 Empyema of the Maxillary Sinus; Etiology and Diagnosis. James M. Brown.
127 The Dark Ages of Medicine. E. J. Kempf.
128 Autointoxication and Its Treatment. Heinrich Stern.

Journal of Mental Pathology, New York.

Nos. 1-3.

129 Case of Toxic Polyneuritis Probably Due to Aniline Poisoning. Eugene Medea and E. Gemelli.
130 On the External Appearance of the Nervous Elements of the Cerebellar Cortex of Young Mammalia. M. J. Gourovitch.
131 Contribution to the Study of Mental Impulses. N. Vaschide and P. Meunier.
132 Remarks on a Case of Precocious Attention to Esthetic Sensations. Raymond Meunier.
133 Suicidal and Homicidal Acts. Their Clinical Aspects and Medicolegal Significance. (Continued.) Louis G. Robinovitch.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

The Lancet, London.

September 23.

1 *Arteriosclerosis. Thomas D. Savill.
2 Fever in Children Caused by the Ingestion of Certain Kinds of Carbohydrate Foods. Henry Davy.
3 *An Analysis of 150 Cases of Death from Bronchopneumonia. Percy Hardy.
4 A Plea for the More Extensive Use of Tuberculin as a Curative and Prophylactic Measure. Albert B. F. Greenbaum.
5 A Case of Perforated Duodenal Ulcer; Operation; Recurrent Hemorrhage; Gastroenterostomy; Recovery. Herbert W. Allingham.
6 A Case of Hematoporphyrinuria Not Due to Sulphonal. G. L. Thornton.
7 *The Channels of Infection in Tuberculosis in Childhood. L. Kingsford.
8 *Some Points in the Prevention of Epidemic Diarrhea. J. T. C. Nash.
9 A Case of Nephritis Simulating Diabetes Insipidus. J. Brunton Blaikie.
10 Death Certification. Wm. Berry.
11 A Note on the Pathology of Lateral Curvature of the Spine. G. C. Steele-Perkins.

1. **Arteriosclerosis.**—During the past seventeen years Savill has made a careful study of arteriosclerosis, especially in regard to arterial hypermyotrophy and the other morbid changes which occur in the muscular tunic of the arteries. He contends that the pathology of the different tunics of the arterial system should be studied separately, just as are the different coats of the heart. That advanced atheroma and a considerable degree of intimal and adventitial sclerosis may exist without serious consequences and be compatible with extreme old age, provided the muscular tunic is unaffected. The prime importance of the muscular tunic, relatively to the intima and adventitia, in that it constitutes the functionally active structure of the arterial system and the regulator mechanism of the whole body, should not be overlooked. There is no doubt that arterial hypermyotrophy, as a substantive generalized change in the arterial system, exists, and its importance must be recognized by reason of the potential evils in the way of circulatory derangements, circulatory accidents, nutritional disturbances, disturbance of the balance between the heart and artery and the degenerations which are apt to ensue. Arterial hypermyotrophy is the first step toward senile decay, and it is the main cause of senile or postural vertigo at any age. The combination of arterial hypermyotrophy and focal necrosis of the media is a most deadly one and may produce death by hemorrhage at a comparatively early age. The condition may result from chronic renal disease, but it has many other causes, all of which probably produce the condition of high arterial tension.

3. **Death from Bronchopneumonia.**—Hardy presents an analysis of 150 cases of death from bronchopneumonia in children under 13 years of age, and on which postmortem examinations were made. He endeavors to show that the feeding of the children by bottle instead of at the breast increases the mortality enormously. Out of 64 cases under 4 years of age in which the method of feeding was known, 32 were breast-fed and 22 were bottle-fed—that is, the deaths from bronchopneumonia were equal, but according to the author's computation, the ratio of mortality among bottle-fed and breast-fed children is as 69 to 9—that is, the mortality from bronchopneumonia is 7.7 times as great in bottle-fed as in breast-fed children. There were well-marked signs of rickets in 25 of the 150 cases, or 16.7 per cent. Of 95 cases between the ages of 6 months and 3 years, there were 21, or 22.1 per cent., while of the 59 cases between the ages of 1 and 3 years—the rickets period par excellence—there were no less than 15, or 25.4 per cent., showing well-marked signs of this disease. In 15 cases the disease occurred during, or followed immediately on, an attack of measles. Of these, 4 patients were under the age of 1

year, 5 were between 1 year and 2 years, 3 between 2 and 3 years, 2 between 3 and 4 years, and 1 between 6 and 7. Twelve cases occurred during an attack of diphtheria. The youngest patient was under 1 year and the oldest under 4. Whooping-cough was a contributory factor in 7 cases. Eight cases occurred during an attack of meningitis; 5 during epidemic cerebrospinal meningitis, and 2 during an attack of suppurative meningitis secondary to suppurative otitis media. There were 5 cases of suppurative otitis media, 3 of general pyemia, 3 were thought to be due to the administration of an anesthetic, 2 occurred during an attack of typhoid fever. Scalds and burns preceded the illness in two instances. In one case the bronchopneumonia followed the impaction of a coin in the œsophagus, and in another it was secondary to erysipelas. Twenty-one cases were initiated by vomiting and diarrhœa. The right lung was alone affected in 9 cases, the left also in 9 cases; both lungs in 132 cases. There were 6 cases of massive bronchopneumonia, 15 cases of suppurative bronchopneumonia, 4 associated with suppurative otitis media, 4 with empyema, 2 with peritonitis, and 3 were part of a general pyemia, while 1 occurred with acute suppurative periostitis. Fifteen cases were complicated by acute fibrinous pleurisy, 1 by a pleurisy with effusion, 16 by empyema.

7. **Tuberculosis in Childhood.**—With a view to determining the correctness of Koch's statement that tuberculous milk is not a source of danger to the human subject, Kingsford has analyzed the postmortem records of 339 cases of tuberculosis in children of all ages up to 14 years. Of this number, 162, or 48 per cent., occurred during the first two years of life, and 270, or 80 per cent., during the first five years, while there is a steady decline in the proportion among older children. Regarding middle-ear cases as infected by inhalation, the tonsil cases as an alimentary infection, and the remaining pharyngeal cases as doubtful, the inhalation accounted for 216 cases, or 63.7 per cent., and ingestion of the 65 cases, or 19.1 per cent., the remaining 17 per cent. being of doubtful origin. So far as can be judged from these methods of investigation, Kingsford concludes that the danger from inhalation far exceeds that from the ingestion of tuberculous material. With regard to the importance of tuberculous milk, however great the potential danger may be, the real danger is greatly exaggerated, probably owing to the children not drinking tuberculous milk of the virulence and in the quantity usually affirmed. Still, the fact that nearly 20 per cent. of the cases of tuberculosis among children are primarily alimentary, makes out a good *prima facie* case against tuberculous milk, and Kingsford believes it will be shown that one of the chief differences between the conditions of life among children at home and abroad which could have any effect in predisposing to primary abdominal tubercle exists in the greater frequency of tuberculous milk in England. Although attention should be directed toward the restriction of the sale of tuberculous milk, it is chiefly to the improvements in the conditions of life, such as cleanliness, ventilation, disinfection and better housing, that we must look for the diminution of tubercle among children.

8. **Prevention of Epidemic Diarrhœa.**—Nash has had printed for distribution among the laity two pamphlets. One, among other matters, calls attention to the dangers of long tube bottles, poor condensed milk, miscalled infant foods, and gives simple directions for preparing milk for hand-fed infants according to age. The second pamphlet contains the following:

> DIARRHŒA.—This disease is very dangerous and rapidly fatal in young infants. It is, therefore, necessary to know how to prevent it rather than to hope to cure it. Several causes contribute to this disease. Any or some or all of these causes may operate in a particular instance. It is important to know what they are and to take the necessary precautions to prevent all, if possible. They are, in one word—dirt. In more than one word, they are: (1) unclean milk and other food; (2) unclean jugs and bottles; (3) unclean hands; (4) unclean surroundings; (5) unclean air (from overcrowding, etc.); (6) unclean flies; (7) unclean dust.
>
> Diarrhœa is more common and fatal in hot weather than at any other time. Why?
>
> 1. Because there are more flies, which settle on dirty refuse heaps, dirty closets, dirty napkins, etc., and then settle on the food or tumble into the baby's milk, or get into the open tin of condensed milk, or walk about the sugar.
>
> 2. Because there is more dust, which is blown in at the open window on to milk and other food left exposed.
>
> 3. Because germs are really very small microscopic plants, which, like nearly all other plants, grow best when the weather is warm. Fortunately boiling will destroy nearly all germs. Therefore, during the hot weather, to prevent young infants from getting diarrhœa from milk, boil all milk directly it comes into the house. But this is not everything. If after milk is boiled it is put into a half-cleaned jug or cup or bottle, or is left exposed so that flies can settle on the margin or fall into it, it will rapidly become contaminated again. Therefore, after boiling, always keep the milk in clean vessels and covered over with a clean cover. The milk should also be kept as cool as possible. A good plan is to stand the covered milk jug in a basin of cold water. A mother or nurse should always wash and dry her hands just before preparing the baby's meal. A large number of people in a room contaminate the air of the room and impart to it properties which will rapidly spoil milk. Therefore, it is important not to allow several people to come into the kitchen or near the larder.
>
> Every precaution should be taken to prevent flies settling on food and to destroy flies in the house. All animal and vegetable waste should be burned as soon as possible. If put into the dustbin or left about in the kitchen or larder, they cause offensive smells and attract and breed flies. Cleanliness in every detail is the great preventive measure against diarrhœa.
>
> When a case of diarrhœa occurs in a house great care should be taken to at once place soiled napkins, etc., in a disinfectant solution and to boil all infected articles as soon as practicable. If napkins, etc., are left exposed flies can settle on them and carry back infection to the baby or to other children in the same house or in neighboring houses.

British Medical Journal, London.

September 24.

12 Relation of Laryngology, Rhinology and Otology with Other Arts and Sciences. Felix Semon.
13 Discussion on Chloroform Anesthesia. Victor Horsley, A. G. Vernon Harcourt and others.
14 Histological Changes Occurring in Ununited Divided Nerves. Robert Kennedy.
15 Cells of the Spinal Ganglia and the Relationship of Their Histologic Structure to the Axonal Distribution. F. Griffith and B. Warrington.
16 Further Investigations on Accommodation. Karl Grossmann.
17 So-called Sanson-Purkinje Reflex Image of the Anterior Lens Surface. Karl Grossmann.
18 Some Changes Observable in Liver Cells During Activity. E. W. Carlier.
19 Some Points in the Physiology of the Mammalian Heart. J. A. MacWilliam.

Intercolonial Medical Journal of Australasia, Melbourne.

August 20.

20 Some Aspects of the Mortality from Puerperal Sepsis. H. O. Cowen.
21 Sporadic Cretinism. A. J. Wood.
22 Alleged Artificial Restriction of Families. W. McLean.
23 *Union of Bowel, with Notes of Two Cases of Enterectomy. G. A. Syme.
24 *Two Intracranial Abscesses; with Sinus Phlebitis. P. S. Webster.
25 *Three Cases of Eye Injury. J. P. Ryan.

23. **Enterectomy.**—Syme says that the ideal intestinal union is one that will hold until cicatrization is complete and firm; one that will not allow contamination of the peritoneum by capillary oozing; that will not contract too much the lumen of the bowel or form too much of a diaphragm in its interior, and that can be performed rapidly. The Murphy button, when it is properly constructed, perfectly applied, and when it acts as it is intended, gives nearly this ideal result. Unfortunately, it is not always perfectly constructed and applied, and does not always act as it is intended. A case is described of carcinoma of the descending and pelvic colon, which infiltrated into an adjacent loop of jejunum. Enterectomy was done, the jejunum being united by suture and the colon by a Murphy button. The patient died about two weeks after operation, and at the autopsy the sutured anastomosis was found intact, but the button anastomosis was a slough with a circular hole, over the lateral aspect and upper edge of the button where the bowel wall was in contact with the abdominal wall. A second case cited was one of perforation of the uterus during curettage, with laceration of the bowel and the mesentery. Fifty-nine inches of small intestine were resected and end-to-end union by suture performed, continuous through all the coats, and then continuous Lambert. The patient made an uneventful recovery. Syme raises another objection to the Murphy button—that it may never be passed. A case is referred to where a portion of bowel was resected for carcinoma and an anastomosis done with the Murphy button. When the patient died of recurrence of the tumor twelve months later, the button was still in place. He advises against the use of all mechanical appliances toward intestinal approximation.

24. **Intracranial Abscesses.**—Webster cites a case of chronic suppuration in the left ear, followed by extradural abscess in the middle fossa, cerebellar abscess and sinus phlebitis. A

very extensive operation was performed, consisting of opening the mastoid cells, the middle fossa, cerebellum, sigmoid and lateral sinuses and the middle ear, with evacuation of a large quantity of pus. The patient made an almost uninterrupted recovery.

25. **Three Cases of Eye Injury.**—The first case reported by Ryan is one of infection of a corneal wound and threatened panophthalmitis six days after extraction of the cataract. He believes that an attack of influenza, which came on about the third or fourth day after the extraction, may have been a factor in the eye trouble. The patient recovered, with fair vision. The second case was one of monocular neuroretinitis in a boy of 10 years. There was no apparent cause for the condition. Ryan suggests that it may be due to a tumor of the optic nerve, and gives a bad prognosis. The third and last case was one of suture of an unhealed corneal incision nineteen days after extraction of a cataract, the material used being two fine silk sutures passed through the entire thickness of the sclera. The wound had healed within a week, when the sutures were removed.

Revue de Chirurgie, Paris.

Last indexed page 835.

26 (XXIV, No. 9.) *De l'intervention opératoire dans les néphrites et dans certaines affections médicales du rein (of kidney). A. Yvert (Dijon).

27 *Des stenoses tuberculeuses de l'intestin grêle chez l'enfant (of small intestine in children). L. Berard and R. Leriche (Lyons). (Commenced in No. 8.)

26. **Operative Treatment of Kidney Affections.**—Yvert discusses the results of surgical intervention in acute and in chronic nephritis, as well as in various other kidney affections. In acute nephritis the reports published to date indicate that nephrotomy is preferable, with nephrectomy later, if it proves inevitable. The former has a mortality record of 5 and the latter of 33 per cent. Decapsulation is still on trial. In case of pyonephrosis resulting from a concrement, nephrolithotomy, incising the convex margin of the kidney down to the seat of the stone, is the operation of election. He attributes to Pousson the merit of systematic operative treatment of chronic nephritis. Out of 9 cases of chronic nephritis treated with nephrotomy by himself or others, 5 of the patients were completely cured, 2 much improved and 2 died. In case of doubt as to which kidney is involved, the reno-renal reflex is an important guide, and an incision on each side would banish every doubt. Nephrectomy has been done in 5 cases of chronic nephritis, with 5 cures. In 2 cases the intervention was limited to capsulotomy with the actual cautery, both cured. Decapsulation does not seem to offer many more advantages than simple nephrotomy, while it is a more serious operation. The future alone can decide whether it is preferable to nephrotomy; the evidence to date seems to be in favor of the latter. Rovsing's nephrolysis or destruction of adhesions after nephrotomy was successful in the 3 cases in which it was applied. It seems to be indicated when the adhesions are particularly extensive and thick. In case of essential nephrorrhagia, nephrotomy is indicated after failure of other measures, as Israel's experience has been so favorable with it. It is likewise indicated in case of rebellious nephralgia, and for the same reasons. In a desperate case of puerperal eclampsia, after failure of all other measures, Yvert would not hesitate to perform nephrotomy, bilateral if necessary, following Edebohls a certain way, but not to the extent of decapsulation. Pousson has performed nephrotomy in a case of rebellious anuria from hysteria, with the cure of the patient for a few months, but recurrence later. He operated only on suspicion of an actual affection of the kidneys, and cautions against similar surgical intervention in pure hysteria. On the whole, Yvert concludes that kidney affections are coming more and more into the realm of surgery. Operative treatment is indicated only after medical treatment has proved powerless, but under these circumstances it should not be abused, but should be resorted to without fear. Of all the modes of intervention proposed to date, the incision along the convex margin of the kidney, simple nephrotomy, seems to be the most effectual, while it is certainly the simplest and most inoffensive.

27. **Stenosis of Small Intestine in Children.**—Twelve cases are reviewed, including one personally observed, in which intestinal tuberculosis caused single or multiple stenosis of the small intestine. The symptoms are insidious and vague. They are noticed as diffuse pains in the abdomen; digestion is tedious and laborious; sometimes there is vomiting, and there may be alternations of constipation and diarrhea. Colic in sections, Hochenegg's "combined ileus," is characteristic when it occurs, but this is rare. The pains are sometimes accompanied by gurgling sounds. The vomit is exclusively of food. The stools may be bloody, or there may be all the signs of subacute occlusion. The abdomen is generally distended, especially in the flanks. Peristaltic waves reveal the painful efforts of the intestine against the obstacle within. Then the pain subsides and the abdomen becomes flatter, although local tympany may persist with gurgling sounds and dullness over the point. The stenosis in children is usually in process of evolution and not cicatricial stenosis, such as is more liable in adults. The stenosis is due to submucous infiltration in the course of enteroperitoneal tuberculosis. The symptoms of the tuberculous peritonitis may predominate. The general condition is bad, the children usually in such a precarious condition that one is tempted to defer the operation, although surgical intervention offers the only chance for recovery. The course of the affection is inevitably progressive. Enteroplasty is seldom indicated. Enterectomy should be done whenever practicable—that is, when the lesions are not extensive and the general health satisfactory. In other cases, the choice must be between exclusion and entero-anastomosis. The site of the stenosis will dictate the mode of intervention. In presence of very extensive foci, simple laparotomy remains the last resource to relieve the phenomena of inflammation, to cause the retrogression of the lesions, and possibly render a secondary resection practicable, while in more cases than one would suppose possible it may lead to the complete recovery of the child.

Berliner klinische Wochenschrift.

28 (XLI, No. 36.) Hyperalgetische Zonen bei Kopfschüssen (with bullet wounds of head). Wilms (Trendelenburg's clinic, Leipsic).

29 *Zur Behandlung der chronisch-rheumatischen und der gonorrhoischen Gelenkerkrankungen mittels der Bierschen Stauungs-Hyperamie (passive congestion for joint affections). A. Laqueur (Brieger's service, Berlin).

30 *Stomach Content in the Aged. H. Soldalin (Copenhagen).—Untersuchungen des Mageninhaltes bei älteren Individuen.

31 Fall von Hirn-Tumor nach Trauma; Operation (brain tumor). E. Liefmann.

32 *Ueber Ptose der Aorta abdominalis. Stifler.

33 (No. 37.) Un nouveau cas de gale norvegienne ou crouteuse (Norwegian scabies). T. de Amicis (Naples).

34 *Hereditäre lues in der 2 Generation. C. Boeck (Christiania).

35 Zur Klinik der Haut-Syphilide (of skin). E. Finger (Vienna).

36 *Cutaneous Manifestations Liable to Accompany Chronic Appendicitis. H. Fournier (Paris).—Sur quelques manifestations cutanées qui peuvent accompagner les appendicites chroniques.

37 Sur un lépride acariatiniforme persistante avec atrophies consécutives en foyers millaires. Variété nouvelle. H. Halloppeau (Paris).

38 *Some of My Opinions. Jonathan Hutchinson.

39 *Ueber infectiöse und toxische haematogene Dermatosen. J. Jadassohn (Berne).

40 Fall von secundärer Syphilis mit schwerer Augenerkrankung (with severe eye affection). G. Pernet (London).

41 *Zur Eosin-Licht-Behandlung (eosin-phototherapy). F. J. Pick and K. Asahi (Prague).

42 Les conditions du développement de la "syphilide pigmentaire" (Leucoderma syphiliticum). G. Thibierge (Paris).

43 *How and Where Should Children with Inherited Syphilis Be Treated? E. Welander (Stockholm).—Wie und wo sollen wir hereditärsyphilitische Kinder behandeln?

29. **Passive Congestion in Treatment of Joint Affections.**—Laqueur has applied Bier's technic of passive congestion by elastic constriction in 40 cases of various joint affections. The patients could use the limb freely after the tourniquet was applied, and all experienced relief from the pain almost at once. The passive congestion also had marked influence in promoting dissolving and absorption. In long established cases this influence was felt less, but in every instance the relief from pain and the improvement in the function were noticeable. It proved a valuable measure not only in chronic articular rheumatism, but also in arthritis gonorrhoica, and its cheapness, simplicity and ready application justify its more general adoption in joint affections. Bier's technic was strictly followed. It was described in THE JOURNAL, xli, page 89.

30. Stomach Content in the Aged.—Seidelin tabulates the findings in 70 subjects, grouping them by the decades after 50. He was surprised to find that the stomach secretion can be retained to an advanced age, even when the subject exhibits signs of pronounced senility in other respects. On the other hand, quite a number presented achlorhydria, and a certain connection between this condition and existing arteriosclerosis seemed to be unmistakably evident. The symptom of achlorhydria in elderly persons, therefore, should not be regarded as important in the diagnosis of cancer or other affections.

32. Ptosis of Abdominal Aorta.—Stifler describes the form of ptosis accompanied by dilatation and the form in which the aorta is contracted. The latter is evidently the result of some inflammatory process, and is the key that solves certain puzzling cases of abdominal ptoses, as well as many vasomotor and secretory anomalies and the symptom-complex of what he calls "sympathicismus." One of the most frequent predisposing causes is defective correction of a wandering kidney by unsuitable bandages. Ptosis of the abdominal aorta is often treated by attacking the symptoms rather than the cause. The therapeutic indications are in general the same as for enteroptosis, but require more delicate application of local hydriatic and electric measures, as also of the supports to be worn. The latter require special medical experience to fit them to the individual case. In his experience with ptoses in general, Stifler has observed about 15 per cent. in which the abdominal aorta was involved or alone affected. He describes a few typical cases. In one, both kidneys were abnormally movable and there was painful gastric pulsation and distress in moving. The dilated, abnormally movable aorta could be distinctly palpated below the umbilicus. One kidney was fastened in 1901 and the other a year later. When seen in 1904, the right kidney had worked partially loose and lay crosswise. The aorta was nearly as wide as two finger breadths, palpable to the left and below the umbilicus; there was a systolic vascular murmur, and the left renal artery was likewise pulsating and dilated. Pain upward to the heart was elicited by pressure on the dilated aorta, with pain radiating to the left costal arch and up to the left scapula. When fatigued or lying partially on the left side, there was the typical gastric beat, weakness and sensation of faintness, but the ability to move and work had improved since the operation on the kidneys. In another case described, the dilatation of the aorta coincided with cardioptosis, and finally kidney symptoms occurred similar to those observed with true aneurism of the aorta. By repose, suitable supports and hydriatic procedures the cardioptosis was cured; the dilatation of the aorta persisted for some time longer, but finally yielded also to treatment. Another patient had suffered from paralysis agitans for years and both kidneys had become abnormally movable, with probably secondary dilatation of the aorta. The kidney and aorta troubles were cured by appropriate bandages alone. A patient with the irritative form of aorta ptosis exhibited a painful pulsation through the entire abdomen below the stomach, most pronounced after exertion, with consecutive heart agitation, frequent vomiting, obstipation and sometimes polyuria. This patient was subject to attacks of stomach migraine. The aorta could be palpated as a movable small cord to the right of the umbilicus, with pain on pressure, radiating upward to the heart and to the scapula on both sides. Pressure on the aorta above the umbilicus induced vomiting and violent, persisting pains, with "inexpressible nausea" for a day afterward. A systolic vascular murmur was evident over the aorta. The left kidney was low and lay crosswise and was sensitive both spontaneously and on pressure. In another case nervous diarrhea, tremor of the entire body, heart cramps and distressing stomach pulsation were all traceable to some irritation of the peritoneum or muscular diastasis resulting from the trauma of a preceding childbirth. The aorta was sensitive to pressure, contracted, movable, sinuous and with strong pulsation, its course lying to the left of the umbilicus. By repose, bandages and packs the patient was practically cured, although there is still pulsation in the aorta a week before and after menstruation. The aorta can still be palpated to above the umbilicus, and it is irregularly thick. The patient still feels the need of an abdominal support, but is otherwise in apparent health.

33. Norwegian Scabies.—De Amicis thinks that the individual conditions must be the reason why this form of scabies differs so much from the ordinary forms. The contagion was unmistakably derived from a person suffering from the ordinary form in both the cases he observed. The subjects were rachitic and poorly nourished.

34. Virulent Inherited Lues in the Second Generation.—Boeck reviews his observation of 4 unmistakable cases, and remarks that the conditions in Christiania enable the family history of the 4 subjects to be accurately known. The affected members in each generation applied to the same hospital, and careful records were kept of each. He adds that in his thirty years of practice he has never known an instance in which inherited lues could be satisfactorily traced to the father. Some trace of the manifestations of syphilis will invariably be found in the mother on careful search. He has encountered only 2 cases in which there was a suspicion of inheritance from the father and they were in society people, and an examination of the mother was impossible. The virulent syphilitic taint in the 4 children described was undoubtedly derived from the inherited syphilis of the mothers, of which they themselves were ignorant. They were all over 20, but this long interval is not so very unusual. Boeck knows of a woman of 47 who bore a syphilitic child thirty-seven years after she had herself been infected at 10. The great theoretic interest of such cases is that they show not only that the virus of syphilis may persist for many years in an organism long after it has lost its apparently virulent properties and has ceased to be contagious under ordinary circumstances, but they also show that this virus, when transmitted to the child through the placenta, can continue in the child. When the child is born and ceases to be under the influence of the maternal organism and of its alexins, the virus resumes its highly virulent properties, and they persist until the child's organism has in turn had time to develop its own necessary antibodies, which then transform the virus again into a non-virulent form.

36. Cutaneous Lesions of Chronic Appendicitis.—Fournier proclaims that chronic appendicitis is much more common than is generally recognized, especially those inflammations which are chronic from the start, never presenting an acute attack, but merely a train of vague protean symptoms. He heartily indorses Lucas-Championnière's views in regard to the part played in its etiology by meat-eating and grippe and the lack of the old-fashioned purges. He knows of many persons who seem to live only for the pleasures of the table, and yet, by means of regular purges and enemas, they keep in good health and live to an advanced age. Meat-eating is liable to induce a general vasoconstricting action and, by the toxins which it engenders, to produce irritation of the intestines, causing spasmodic contraction of the intestine, with obstinate constipation. This installs an infectious condition which throws wide the gate for all kinds of complications, and from enterocolitis may lead to chronic appendicitis. The cutaneous manifestations of this condition have not been much studied hitherto, although Moty has called attention to the flush in the right cheek, rarely missing in febrile appendicitis, and resembling the congestion noted in pneumonia in the cheek of the affected side. Labial herpes is also frequent. In one case of chronic appendicitis he noticed sudation of the head and neck on the right side. This hypersecretion extended exactly to the median line and persisted during the ten years of the chronic appendicitis, vanishing after appendicectomy. He noticed it also in a case of acute appendicitis. Fournier's experience has been that a number of cases of purpura, eczema, pruritis, urticaria, prurigo and acne are due directly to chronic appendicitis. The colon bacillus was found in the purpuras of some of de Benedetti's patients, demonstrating the intestinal origin of the toxemia. The purpura in one of Fournier's patients never reappeared after appendicectomy. In another pa-

tient no possible cause for the prurigo could be detected until slight tenderness at McBurney's point was discovered. He was put on a vegetable diet and the prurigo vanished. He grew thinner during the six months he kept up this diet, but his skin was entirely free from the eruptions which had previously annoyed him. In another patient, anal pruritis and eczema around the lips always appeared when intestinal troubles were noted, but since the latter have been avoided there has been no recurrence of the former. A pruriginous acne in another patient is undoubtedly due to chronic appendicitis, and Fournier anticipates a cure so soon as the patient is willing to have the appendix removed. The cutaneous manifestations in these and other cases were the clue to the ignored inflammatory process in the intestines. Whenever a recurring, obstinate cutaneous affection is encountered, which can not be referred to any other cause, the appendix should be suspected. The patients can be operated on at once or they may be cured by instituting a suitable diet, etc. The inherited or acquired neuropathy which is generally the cause of the primary enteroneurosis frequently misleads the physicians into regarding these patients as merely hypochondriacs, which they really are in the true sense of the word. Their descriptions of their symptoms can be relied on, as they are usually excellent observers. Sireday has well emphasized this point in his study of the "formes frustes" of appendicitis: "Beware of dyspepsia refractory to rational dieting and not traceable to any definite cause. All the subjects may not be affected with appendicitis, but the majority are, and the appendix should in every instance be carefully scrutinized." The presence of a refractory dermatosis may be an aid in diagnosing, especially when associated with a dull or "bilious" complexion, freckles or "liver spots," predisposition to goose-flesh, itching and urticaria.

38. **Some of Jonathan Hutchinson's Opinions.**—Merely to cite a few, may be mentioned Hutchinson's contention that syphilis should rank as a specific fever, and that the most convenient mode of treating it is in the form of pills of hydr.: cum Creta, 1 to 2 grains for a dose. The course should be kept up for a year or two without interruption. During the last ten years very few of his patients have known any other symptoms than the indurated chancre and the bubo. He allows marriage after two full years from the chancre. He does not believe in the possibility of transmission of syphilis to the third generation, but accepts that of transmission of syphilis from the father without direct infection of the mother. When the father only is the source of the taint, it is seldom that any except the first-born suffer. The virus probably exists in the ovaries much longer than it does in the testes. A great many instances of second attacks of syphilis have come under his notice. He believes that yaws, framboesia, parangi and thaku are forms of syphilis. In his experience, the characteristic teeth are commonly associated with interstitial keratitis, but the subjects of phagedaenic ulcerations very often do not show the teeth and sometimes escape the keratitis. Almost all the affections which pass under the names of prurigo and purpura urticans, lichen urticatus, bullous and chronic urticaria in children, and some of those called strophulus, are due to insect bites, he thinks, and gives nearly a dozen convincing arguments to sustain this view. Urticaria pigmentosa is the result of bug bites in persons of peculiar idiosyncrasy. He is a firm believer in the curability of leprosy with a liberal supply of good food and absolute abstinence from fish, with chaulmoogra oil, internally and externally, as an adjuvant. The relapses of leprosy in Norway are probably the result of a return to a fish diet. He regards it as probable that the bacillus of leprosy and of tuberculosis are differentiated forms of the same organism. He further believes that gonorrhea in all stages is best treated by parasiticide injections, and that the long continued use of arsenic, externally or internally, increases the tissue proclivity to malignant growth. The latter is not due to parasitic infection, but to heritable proclivities on the part of the tissues, essentially the same for the various forms of malignant disease. Certain other mineral drugs may share with arsenic this property of tending to increase the proclivity to cancer.

39. **Hematogenic Dermatoses.**—Jadassohn relates a number of examples to demonstrate that acute and chronic infectious diseases, even including pyemia and gonorrhea, are liable to cause metastases in the skin. The resulting exanthemata are acute or chronic, as the case may be, varying with the nature of the morbid germ, the essence of the fundamental process, and with the number of the bacteria penetrating into the skin. These dermatoses display a marked tendency to dissemination and to symmetrical localization, and are polymorphous not only in different individuals, but in the course of the same disease. The efflorescence may range from the smallest roseola patch to a diffuse dermatitis, from a superficial papule to the nodules suggesting deep erythema nodosum, from insignificant superficial necrosis to deep-reaching gangrene. Hematogenic inflammation generally involves the veins rather than the arteries, and the bacteria settle in the smaller rather than in the large veins. They plug the veinules or penetrate from them into the surrounding tissues. When the large veins are involved the process is usually on the extremities, especially in the legs. The germs arriving by way of the blood cause milder lesions than those of exogenic origin, with few exceptions. Hematogenic cutaneous infections display a marked hemorrhagic tendency and also a tendency to moderate necrosis and softening. The article is continued.

41. **Eosin Phototherapy.**—Pick has had 22 patients treated at his clinic by exposure to concentrated sunlight after preliminary injections of eosin. The subjects included 12 with lupus, 5 with tinea, 1 with ulcus rodens and the others with excised patches of lupus. The results were eminently encouraging, as is seen from a few typical cases described at length.

43. **How and Where Shall Children with Inherited Syphilis Be Treated?**—Welander's question is answered by the results attained at the small asylum which has been built near Stockholm exclusively for the use of such children. They are kept from infecting others by their segregation here, while every condition is supplied to enable them to develop into healthy adults, with intermittent antisyphilitic treatment as indicated. The institution is already overcrowded with 13 inmates; 22 have been under its care in all. It was founded by charitable enterprise, and the annual expenses average $1,500.

Deutsche medicinische Wochenschrift, Berlin and Leipsic.

44 (XXX, No. 37.) *Zur Behandlung des chronischen Empyems der Highmors-Höhle. P. L. Friedrich (Greifswald).
45 *Ueber die Einwanderung der Ankylostomum-Larven von der Haut aus (entrance through the skin). F. Schaudinn.
46 *Ocular Symptoms with Paralysis of the Arm. F. Volhard (Giessen).—Ueber Augensymptome bei Armlähmungen.
47 *Zur Frage der Hilfe für Giftarbeiter (poisonous trades). H. Brat. Reply to L. Lewin.
48 *Ueber abnorme Stuhlbefunde bei Pankreas Erkrankungen (abnormal stool findings). H. Ury and M. Alexander (Boas' clinic, Berlin). (Commenced in No. 36.)
49 Amyotrophische Lateral-Sklerose nach Trauma. O. Giese.
50 Neue Salicyl-Präparate und neue Anwendungsformen der Salicyl-Säure. P. Müller (Dresden).
51 Exhibit of German Imperial Council of Public Health at St. Louis.—Das Kaiserliche Gesundheitsamt auf der Weltausstellung in St. Louis.
52 Nitrite im Urin. Steensma. Abstract.
53 Theorie der Hysterie. van Erp Taalman Kip. Abstract.
54 Plastiken im Ureter-Gebiet. Krause. Abstract.
55 Traumatic Neuroses Among Railroad Employes. Fürstner. Abstract.

44. **Treatment of Chronic Empyema of the Maxillary Sinus.**—Friedrich has treated 7 patients by the technic he describes, including a few cases of long standing fetid suppuration. All were rapidly cured. He opens up the sinus, not only enough to expose it amply, but also to establish a broad communication between it and the nose. He turns back the soft parts of the nostrils and makes a rectangular opening through the anterior bony wall, close to the floor of the maxillary sinus, and removes the wall between it and the nose for about 1 by 3 cm. It may be necessary to remove a small portion of the inferior turbinate. The nasal orifice of the lachrymal duct is not injured, but the sinus is widely exposed and all irregularities and suspicious points can be easily treated. The entire cavity is then tamponed, the end of the gauze brought out through the nose, and the incisions sutured. The tampon is removed after a few days; the sinus is rinsed out a few times and then

left to itself. The epithelium rapidly forms again from the remnants left after the partial exochleation of the cavity. One of his patients had had the empyema on one side for thirteen and on the other for eleven years, and had been constantly under the treatment of specialists, without relief. He has been radically cured during the nearly three years since this intervention, and is one of the most grateful patients that Friedrich has ever encountered in his surgical practice. The details of the incision are shown in a couple of illustrations.

45. **Entrance of Ankylostoma Larvæ Through the Skin.**—A few years ago, Looss, of Cairo, announced that the larvæ of ankylostomata were able to penetrate into the circulation through the intact skin. Schaudinn's experiences and tests have fully confirmed this possibility, and at the recent International Congress of Zoology, Looss showed specimens demonstrating the mechanism by which the larvæ find their way from the intact skin into the intestines. They get into the superficial veins, then through the right heart into the capillaries in the lungs, thence into the alveoles, and then find their way through bronchi, trachea, throat, esophagus and stomach into the intestines. Some of the larvæ get into the lymphatics and thence into the veins. Schaudinn's experiments were made with monkeys, Looss' with dogs. The latter's attention was attracted to the subject by infection of his own person, which could be explained only by the assumption of percutaneous infection.

46. **Eye Symptoms with Paralysis of the Arm.**—Volhard analyzes 4 cases of paralysis. In 2 there was total paralysis of the right arm, accompanied by ocular symptoms which have a bearing on the prognosis. In all there was slight asymmetry of the eyes, myosis, inability to open the eyes wide and slight exophthalmus on the paralyzed side, but the movements of the eyes were unrestricted and the reaction of the contracted pupil to light and accommodation was retained. These same symptoms were observed also in the 2 other patients, although the paralysis was of a different nature. In one it was the result of a stab wound in the back of the neck, between the third and fourth cervical vertebræ, the entire right side becoming paralyzed below the lesion. The other patient had a carious affection of the gray matter in the region of the eighth cervical and first dorsal segment. Volhard explains the mechanism of the eye symptoms in each case. In the first 2, in which the paralysis was due to traumatic injury of the plexus, the eye symptoms indicated that the roots nearby had also been injured. This contraindicated surgical intervention, as the roots are not amenable to an operation. The prognosis is not rendered materially unfavorable by their involvement, as such a lesion may heal. The hyperextension of the arm causing the injury to the plexus should be spoken of rather as an overstretching of the nerve of the region.

47. **Workers in Poisonous Chemicals.**—Brat reviews the experiences in various manufactures in which the workmen are exposed to the action of poisonous substances. So much has been done to protect the workmen that the cases of poisoning have been very much reduced in number and severity. This is due to private initiative on the part of the proprietors and care on the part of the workmen. He does not think that legislation on the subject is necessary. Lewin replies to him that if private initiative is enough in certain instances, it can by no means be relied on in all. He hints that Brat's views on the subject may be influenced by the fact that he is physician to a certain industrial establishment, and reaffirms his own views, previously summarized in these columns, page 231.

48. **Abnormal Stools in Pancreatic Affections.**—A number of cases are described with the special features of the abnormal stools to decide the diagnostic importance of the latter for the assumption of a pancreatic affection. The passage of fluid fat, separate from the rest of the feces, and the lesser splitting of fat are strongly suggestive of an affection of the pancreas in a diabetic, provided the stools are formed and there is no icterus. These abnormal stools are not pathognomonic, as they may be the relics of some severe affection of the small intestine. Fat diarrhea is now considered suspicious of some lesion in the small intestine even in adults. In one case described, as also in a certain proportion of diabetics, the stools showed abnormal reduction of the utilization of the food on a diet which is assimilated readily by a normal subject and by the overwhelming majority of diabetics. Whether this is due to some pancreatic affection can be decided only by postmortem examination. Volhard thinks that it is possible, with a little practice, to detect an abnormal amount of undigested muscle fiber in the stools. Disturbances in the motor, absorbing and secretory functions in the domain of the small intestine (including the cases of missing pancreatic secretion) can induce an increased elimination of undigested muscle fiber. The article aims to show that it is necessary to examine the stools for the naked eye, microscopic and possibly chemical findings in case of suspicion of a pancreatic affection, but that the findings must be carefully weighed, as the clinical symptoms of a number of other affections are liable to simulate the stools of pancreatic disease.

Mitteilungen a. d. Grenzgebieten der Med. u. Chir., Jena.

Last indexed page 932.

56 (XIII, No. 3.) *Hyperglobulie und Milz-Tumor (of spleen). F. Preiss (Königsberg).

57 Meine Erfahrungen über Appendicitis. K. G. Lennander.

58 *Does Gelatin Influence Coagulation of Blood? H. Kaposi (Heidelberg).—Hat die Gelatine einen Einfluss auf die Blutgerinnung? Kritische und exp. Untersuchungen.

59 *Pathology of the Open Pneumo-Thorax and the Bases for Mode of Avoiding it. Sauerbruch (Breslau).—Zur Pathologie des offenen Pneumothorax und die Grundlagen meines Verfahrens zu seiner Ausschaltung.

60 *Mode of Avoiding the Consequences of Pneumothorax by Means of Plus Pressure. L. Brauer (Heidelberg).—Die Ausschaltung der Pneumothoraxfolgen mit Hilfe des Ueberdruckverfahrens.

56. **Hyperglobulia and Enlargement of Spleen.**—Preiss reports 2 cases of hyperglobulia with cyanosis, enlarged spleen and albuminuria. He explains the condition by assuming that the diseased spleen engenders some substance which passes into the blood and stimulates the bone marrow to excessive production of red corpuscles. The tuberculin test will determine the cases due to a tuberculous process.

58. **Coagulating Power of Gelatin.**—Kaposi demonstrated the coagulating properties of gelatin in respect to the blood by first inhibiting coagulation in animals by extract of leeches, and then injecting gelatin. The latter induced coagulation visible to the naked eye even under these conditions. He recommends Krause's technic for sterilizing the gelatin, as he found it invariably reliable, while its coagulating and other properties were not affected. The gelatin is heated by steam to 100 C. for half an hour on five successive days.

59 and 60. **Sauerbruch's Air Chamber for Operations Within the Thorax.**—The air chamber and the possibilities it offers for operations without fear of pneumothorax have been fully described in THE JOURNAL, xlii, pages 930 and 1191. This article is the complete report to date, containing also the writer's researches on the pathologic physiology of pneumothorax and on the physiology of normal lung action. In case of pneumothorax the collapse of the lung is the danger. The trouble arises from the fact that the collapsed lung receives too much blood and the intact one too little. The air chamber at present in use is large enough to hold the patient and three operators. A suction pump reduces the atmospheric pressure to minus 10 mm. Hg. The head of the patient protrudes from the air chamber, and the abdomen and legs are enclosed in a bag, which also communicates with the outer air, thus avoiding danger of venous congestion. Sauerbruch first thought of and finally rejected the plus pressure method advocated by Brauer as liable to prove dangerous for reasons which he enumerates. This method is the filling of the lungs through a tracheal canula with air under plus pressure. This technic is apparently simpler, as it obviates the necessity for the air chamber, but the conditions in the circulation which it induces are menacing, especially to a debilitated subject in need of surgical intervention.

[The Sauerbruch air chamber has established its usefulness in the clinic, having already passed the tentative stage. Mikulicz had operated on ten patients with its aid up to the middle of August. The article is fully illustrated, the curves of the

various experiments being likewise given. The periodical in which it appears is published by G. Fischer, Verlag von G. Fischer, Jena, Germany.—ED.]

Münchener medicinische Wochenschrift.

61 (LI, No. 34.) *Absorption of Albuminoids in Alimentary Canal of the Newborn. Ganghofner and J. Langer (Prague).—Resorption genuiner Eiweisskörper im Magen-darmkanal neugeborener Tiere und Säuglinge.
62 *Portals of Entry for Tuberculosis. B. Fischer (Bonn).—Eintrittspforten der Tub.
63 *Essence of Tuberculosis on Basis of Latest Researches. Wolff (Reiboldsgrün).—Wesen der Tub. auf Grund der neueren Forschungen und klinischen Erfahrungen.
64 Experimente zur Frage der fettigen Degeneration. A. Dietrich.
65 Experimentelles über Vagus-Funktion. H. Starck.
66 *Quantitative Test for Separate Albumins. A. Oswald (Zurich).—Eine einfache, klinisch verwertbare Methode, die verschiedenen Harneiweissstoffe getrennt quantitativ zu bestimmen.
67 Fall von Paratyphus. Erne.
68 Zur Kasuistik der Mesotan-Exantheme. Korsch.
69 2 gerichtlich-medizinisch wie chirurgisch interessante Fälle von Körperverletzung (personal injuries). B. Bayerl.
70 Spring Force Syringe. A. Strauss (Barmen).—Eine neue Feder-Druck-Injektions-Spritze mit Abstell- und Regulier-Vorrichtung für Oele und Flüssigkeiten, speziell für Iodipin.
71 Zum internationalen Kongress in St. Louis. Carl Beck.
72 Moderne social-aerztliche Strebung (efforts toward organisation of the profession, etc.). F. Siebert (Munich).

61. Absorption of Albumin by the Newborn.—The experimental and clinical research reported from Prague has established that albumin foreign to the body, introduced into the alimentary canal, is absorbed comparatively unmodified. It can be detected again in the blood by means of the biologic test. The age limit up to which time this is possible was the seventh day of life in the experiences reported. When a very large amount was introduced it could be detected in the blood even in somewhat older subjects. The experiments with puppies, kittens, rabbits, etc., were conclusive, and the eighth day was invariably the limit. In infants the age limit seems to be a trifle later. In case of a gastrointestinal affection, inducing lesions in the alimentary canal, the absorption can occur likewise at a later age. The research further established that albumin thus absorbed induced the production of an antibody. This suggests that the administration of foreign albumin to a normal newborn infant, or to an older infant suffering from some gastrointestinal trouble, is liable to do harm as it passes unmodified into the blood and starts the specific reaction on the part of the organism. The experimental parental administration of foreign albumin always entailed emaciation in the young and generally also illness, frequently fatal.

62. Portals of Entry for Tuberculosis.—Among the arguments presented by Fischer to prove the fallacy of von Behring's recent announcements is the fact that pulmonary tuberculosis is as common in Japan as in Europe, and yet, for religious reasons, the children are never given cow's milk, but are always nursed by their mothers or wet nurses. In one point, however, von Behring's views deserve the widest attention and acceptance. This is that the war against tuberculosis must begin with the infant. The child must be removed from a tuberculous environment, its food must be germ-free, and its body must be rendered so robust that it will come out victorious in the almost unavoidable conflict with tuberculous infection later.

63. Essence of Tuberculosis.—Wolff's experience at the great sanatorium at Reiboldsgrün, and his deductions from what has been written and learned in regard to tuberculosis, have convinced him that it is essentially a chronic, constitutional, infectious disease, with hematogenic dissemination of the infection to all organs. A single infection—which usually occurs in childhood—suffices for the later development of phthisis, but a second infection of an already infected subject remains a superficial affection, without further consequences.

66. Quantitative Test for Various Albumins in Urine.—Oswald recommends the technic described as a simple bedside quantitative test for fibrinogen, euglobulin, pseudo-euglobulin and albumin in the urine. It is a combination of the method of fractional precipitation with neutral salts and the Esbach albuminimeter. Four of the albuminimeters are used, and in A the total albumins are determined with the Esbach reagent as usual. In B a saturated solution of ammonium sulphate is added to the urine in the proportion of 2.8 to 7.2 urine. This will precipitate the fibrinogen. In C the proportion must be 3.6 to 6.4 urine—the euglobulin fraction. In D the proportion must be 5 to 5 urine to precipitate the pseudoglobulin. The albuminimeter B gives the proportion of fibrinogen or fibrinoglobulin; C minus B gives the proportion of euglobulin in the urine; D minus C gives the proportion of pseudoglobulin, and A minus D gives the albumin. He tabulates the findings in 5 cases, the total albumin ranging from 4 to 12 per thousand; no fibrinogen; the euglobulin, from .25 to 2.5; the pseudoglobulin, from .5 to 1.5, and the albumin, from 3 to 11.5. All were cases of acute or chronic nephritis, one scarlatinal. In the latter, the figures were respectively: 10, 0, 2.5, 1.5 and 6 per thousand.

Books Received.

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

LECTURES TO GENERAL PRACTITIONERS ON THE DISEASES OF THE STOMACH AND INTESTINES. With an Account of Their Relations to Other Diseases and of the Most Recent Methods Applicable to the Diagnosis and Treatment of Them in General; also "The Gastro-intestinal Clinic," in which All Such Diseases are Separately Considered. By Boardman Reed, M.D., Professor of Diseases of the Gastro-intestinal Tract, Hygiene and Clinology in the Department of Medicine of Temple College, Philadelphia. Illustrated. Cloth. Pp. 1021. Price, $5.00 net. New York: E. B. Treat & Co. 1904.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN, For the Use of Students and Practitioners. By James Nevins Hyde, A.M., M.D., Professor of Skin, Genito-urinary and Venereal Diseases, Rush Medical College, Chicago, and Frank Hugh Montgomery, M.D., Associate Professor of Skin, Genito-urinary and Venereal Diseases, Rush Medical College, Chicago. Seventh and Revised Edition. Illustrated with 107 Engravings and 34 Plates in Colors and Monochrome. Cloth. Pp. 938. Price, $4.50. Philadelphia and New York: Lea Brothers & Co. 1904.

DISEASES OF THE NOSE, THROAT AND EAR, and Their Accessory Cavities. By Seth Scott Bishop, M.D., D.C.L., LL.D., Honorary President of the Faculty and Professor of Diseases of the Nose, Throat and Ear in the Illinois Medical College. Third Edition. Thoroughly Revised, Rearranged and Enlarged. Illustrated with 94 Colored Lithographs and 230 Additional Illustrations. Cloth. Pp. 564. Price, $4.00 net. Philadelphia: F. A. Davis Co.

TEXT-BOOK OF NERVOUS DISEASES AND PSYCHIATRY, For the Use of Students and Practitioners of Medicine. By Charles L. Dana, A.M., M.D., Professor of Nervous Diseases and (ad interim) of Mental Diseases in Cornell University Medical College. Sixth Revised and Enlarged Edition. Illustrated by 244 Engravings and 3 Plates in Black and Colors. Cloth. Pp. 690. Price, $4.00. New York: Wm. Wood. 1904.

HAND-BOOK OF THE ANATOMY AND DISEASES OF THE EYE AND EAR, For Students and Practitioners. By D. B. St. John Roosa, M.D., LL.D., Professor of Diseases of the Eye and Ear in the New York Post-graduate Medical School, and A. Edward Davis, A.M., M.D., Professor of Diseases of the Eye in the New York Post-graduate Medical School. Cloth. Pp. 300. Price, $1.00 net. Philadelphia: F. A. Davis Co.

THE URINE and Clinical Chemistry of the Gastric Contents, the Common Poisons and Milk. By J. W. Holland, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College of Philadelphia. Forty-one Illustrations. Seventh Edition, Revised and Enlarged. Cloth. Pp. 172. Price, $1.00 net. Philadelphia: P. Blakiston's Son & Co. 1904.

THE NERVOUS AFFECTIONS OF THE HEART, Being the Morison Lectures Delivered Before the Royal College of Physicians of Edinburgh in 1902 and 1903. By George Alexander Gibson, M.D., Sc. D., F.R.C.P. Ed., F.R.S.E., Honorary Member of the Medico-chirurgical Society of Norwich. Cloth. Pp. 90. Edinburgh and London: Young J. Pentland. 1904.

DIET AND FOOD CONSIDERED IN RELATION TO STRENGTH AND POWER OF ENDURANCE, TRAINING AND ATHLETICS. By Alexander Haig, M.A., M.D. Oxon., F.R.C.P., Physician to the Metropolitan Hospital and the Royal Hospital for Children and Women. Fifth Edition. With Seven Illustrations. Cloth. Pp. 138. Price, $1.00 net. Philadelphia: P. Blakiston's Son & Co. 1904.

MANUAL OF PHYSIOLOGICAL AND CLINICAL CHEMISTRY. By Elias H. Bartley, B.S., M.D., Ph.G., Professor of Chemistry, Toxicology and Pediatrics in the Long Island College Hospital. Second Edition, Revised and Enlarged. With 47 Illustrations. Cloth. Pp. 188. Price, $1.00 net. Philadelphia: P. Blakiston's Son & Co. 1904.

ZEITSCHRIFT FUR ORTHOPAEDISCHE CHIRURGIE Einschliesslich der Heilgymnastik und Massage. Herausgegeben von Dr. Albert Hoffa, Geh. Medicinalrath, a. o. Professor an der Universität Berlin. Band XIII, Hefte 1. Mit 34 in den text gedruckten abbildungen. Paper. Pp. 230. Stuttgart: Verlag von Ferdinand Enke. 1904.

ENLARGEMENT OF THE PROSTATE, Its Treatment and Radical Cure. By C. Mansell Moullin, M.D. Oxon., F.R.C.S., Senior Surgeon and Lecturer on Surgery, at the London Hospital. Third Edition. Cloth. Pp. 204. Price, $1.75 net. Philadelphia: P. Blakiston's Son & Co. 1904.

PUBLICATIONS FROM THE LABORATORIES OF THE JEFFERSON MEDICAL COLLEGE HOSPITAL. Vol. I. Paper. Philadelphia. 1904.